US009233543B2

(12) **United States Patent**
Hirasawa et al.

(10) **Patent No.: US 9,233,543 B2**
(45) **Date of Patent: Jan. 12, 2016**

(54) **WASTE LIQUID CONTAINER, ATTACHMENT, WASTE LIQUID COLLECTION UNIT, AND LIQUID EJECTING APPARATUS**

(71) Applicant: **SEIKO EPSON CORPORATION**, Tokyo (JP)

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(73) Assignee: **Seiko Epson Corporation**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/699,914**

(22) Filed: **Apr. 29, 2015**

(65) **Prior Publication Data**

US 2015/0314605 A1 Nov. 5, 2015

(30) **Foreign Application Priority Data**

Apr. 30, 2014 (JP) 2014-094230
Oct. 27, 2014 (JP) 2014-218054

(51) **Int. Cl.**
B41J 2/165 (2006.01)
B41J 2/17 (2006.01)

(52) **U.S. Cl.**
CPC ***B41J 2/1721*** (2013.01); ***B41J 2/16547*** (2013.01)

(58) **Field of Classification Search**
CPC B41J 2/1721; B41J 2/165; B41J 2/16523; B41J 2/16547
See application file for complete search history.

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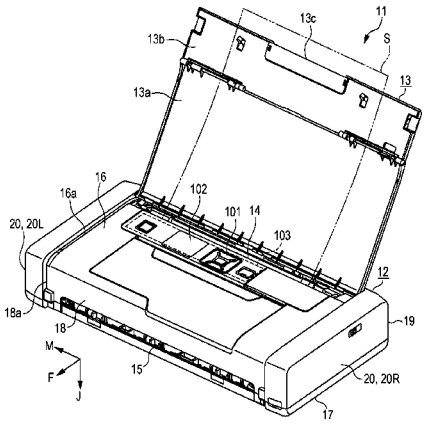
* cited by examiner

Primary Examiner — Juanita D Jackson
(74) *Attorney, Agent, or Firm* — Workman Nydegger

(57) **ABSTRACT**

A waste liquid container is detachably mounted on a mounting unit which includes a discharge portion discharging a waste liquid and a projection to which a substrate connection portion is joined. The waste liquid container includes: a containing portion that is able to contain the waste liquid; a connection concave portion that is opened in a mounting direction; a circuit substrate that includes connection terminals electrically connected to the substrate connection portion and is joined to the connection concave portion; and a waste liquid introduction portion that is connected to the discharge portion. In the connection concave portion, one pair of guide portions guiding the projection is formed so that the connection terminals are interposed therebetween in a width direction intersecting the mounting direction. Of the pair of guide portions, one guide portion is disposed between the connection terminals and the waste liquid introduction portion in the width direction.

17 Claims, 36 Drawing Sheets



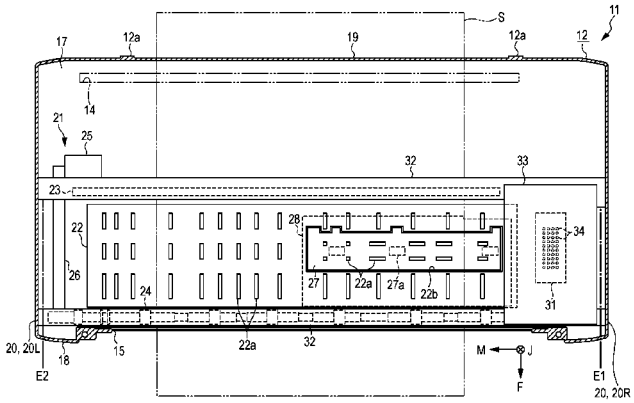


FIG. 1

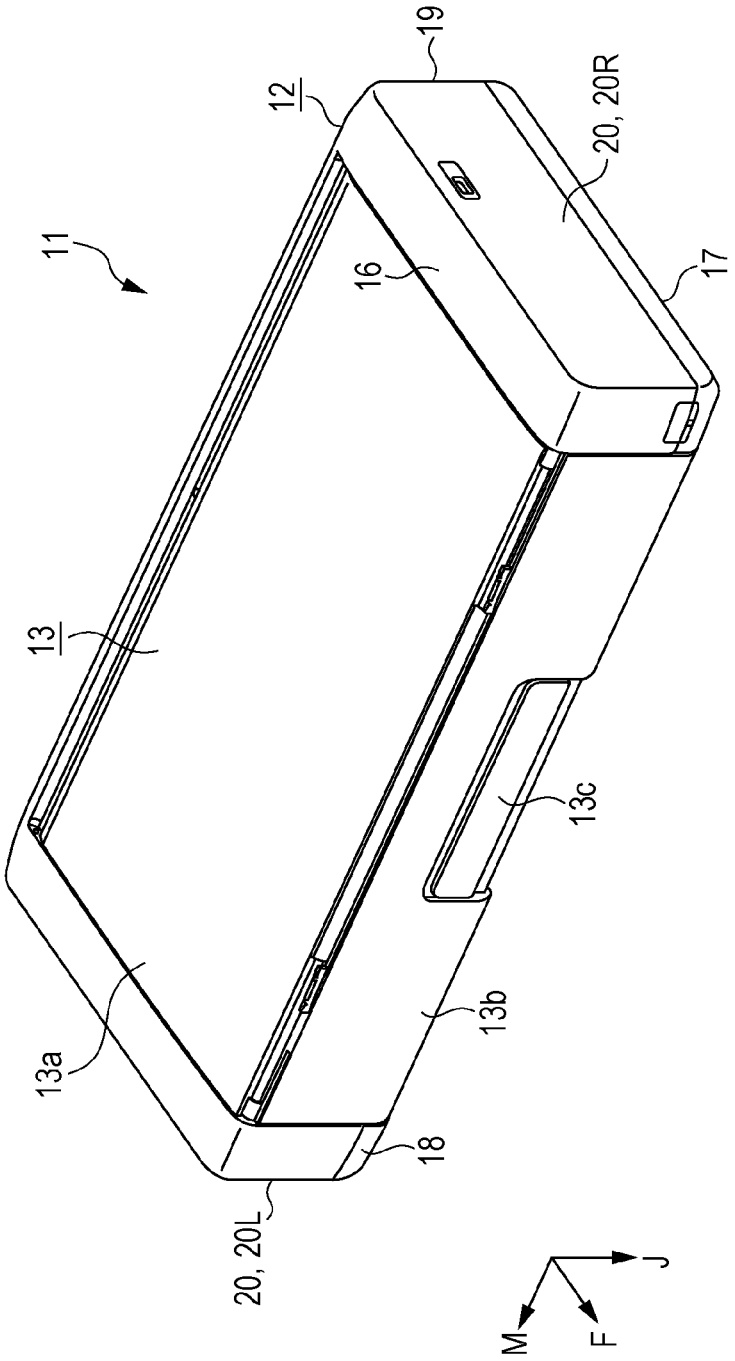
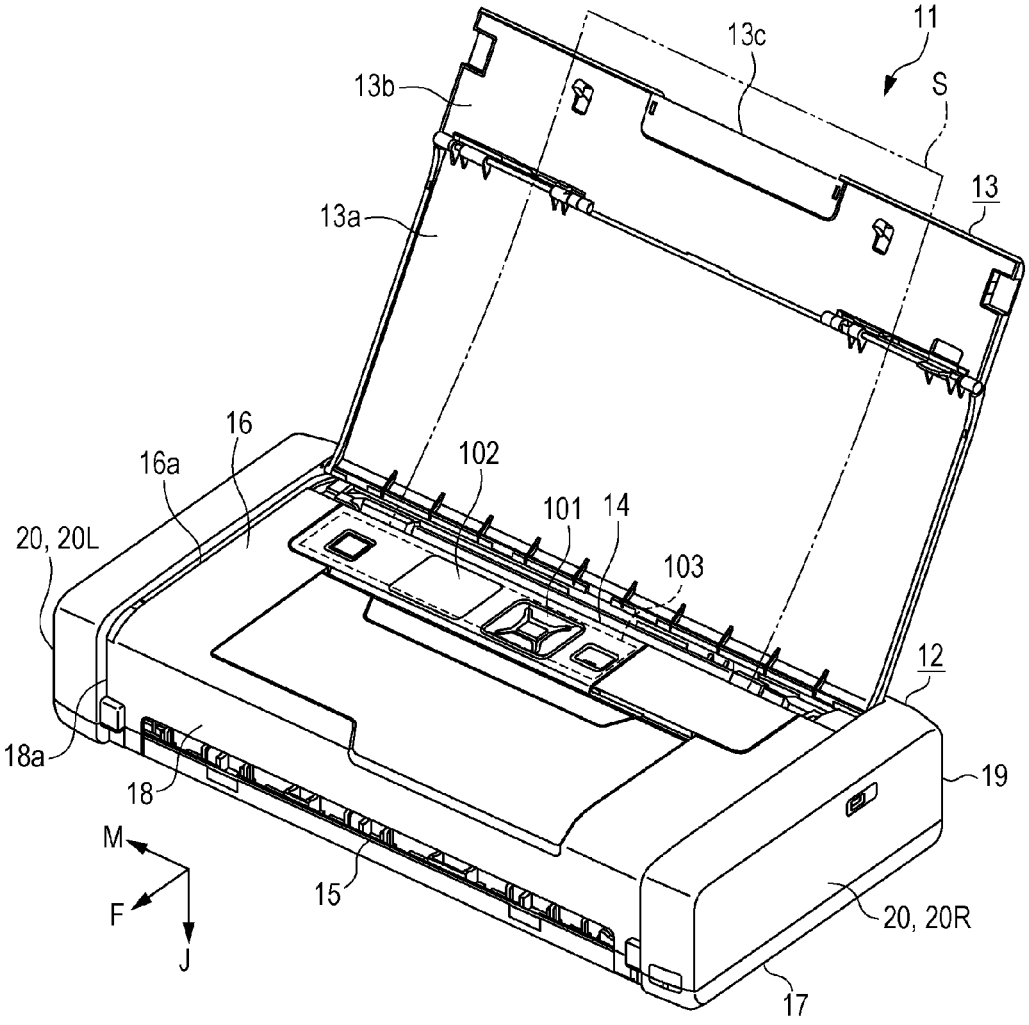


FIG. 2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13c
S
13b
13
13a
16
16a
102
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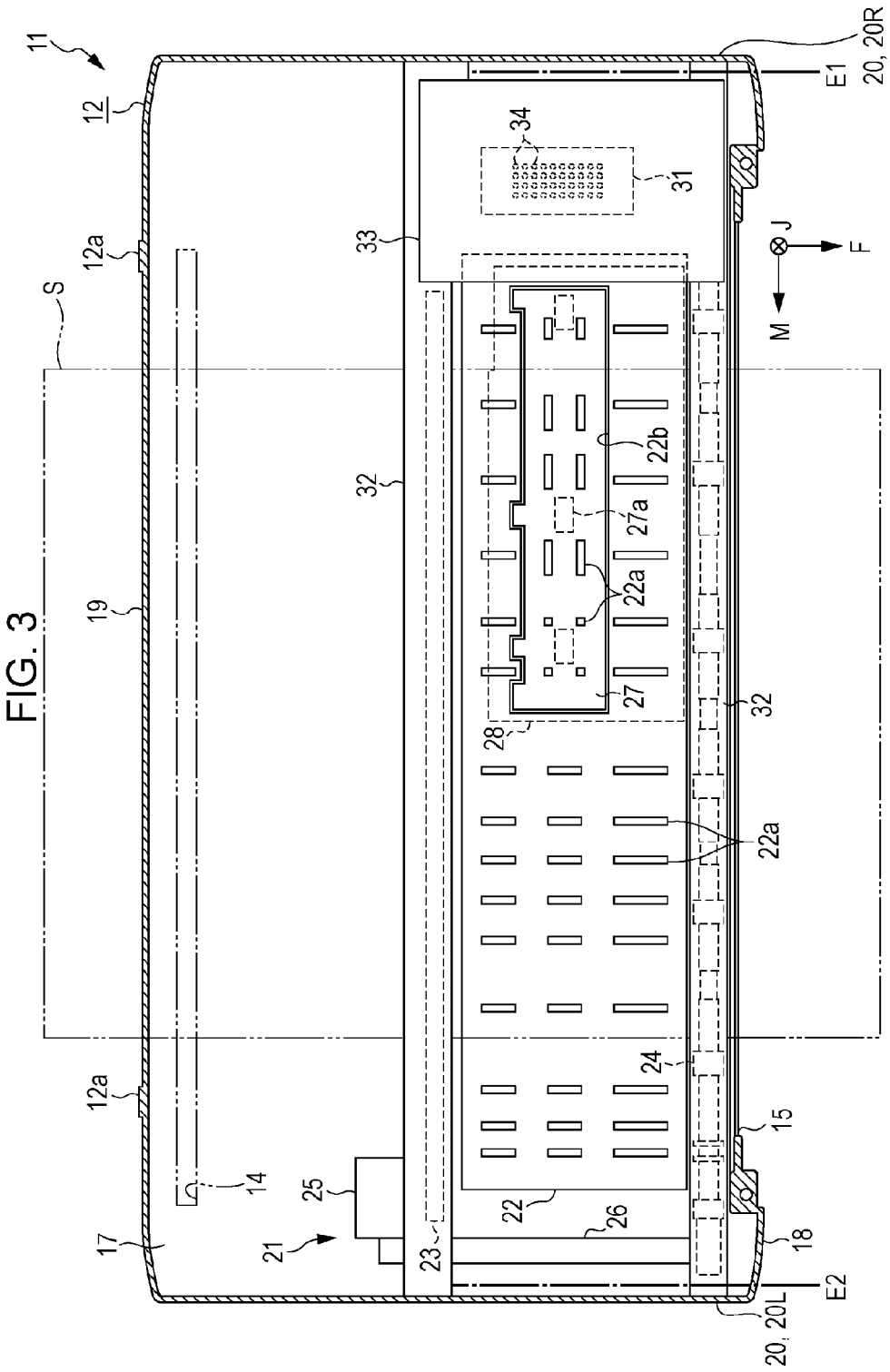
20, 20L
103
12
18a
19
18
M
F
J
15
20, 20R
17

FIG. 3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12a
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24
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18
E2
20, 20L
E1
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31
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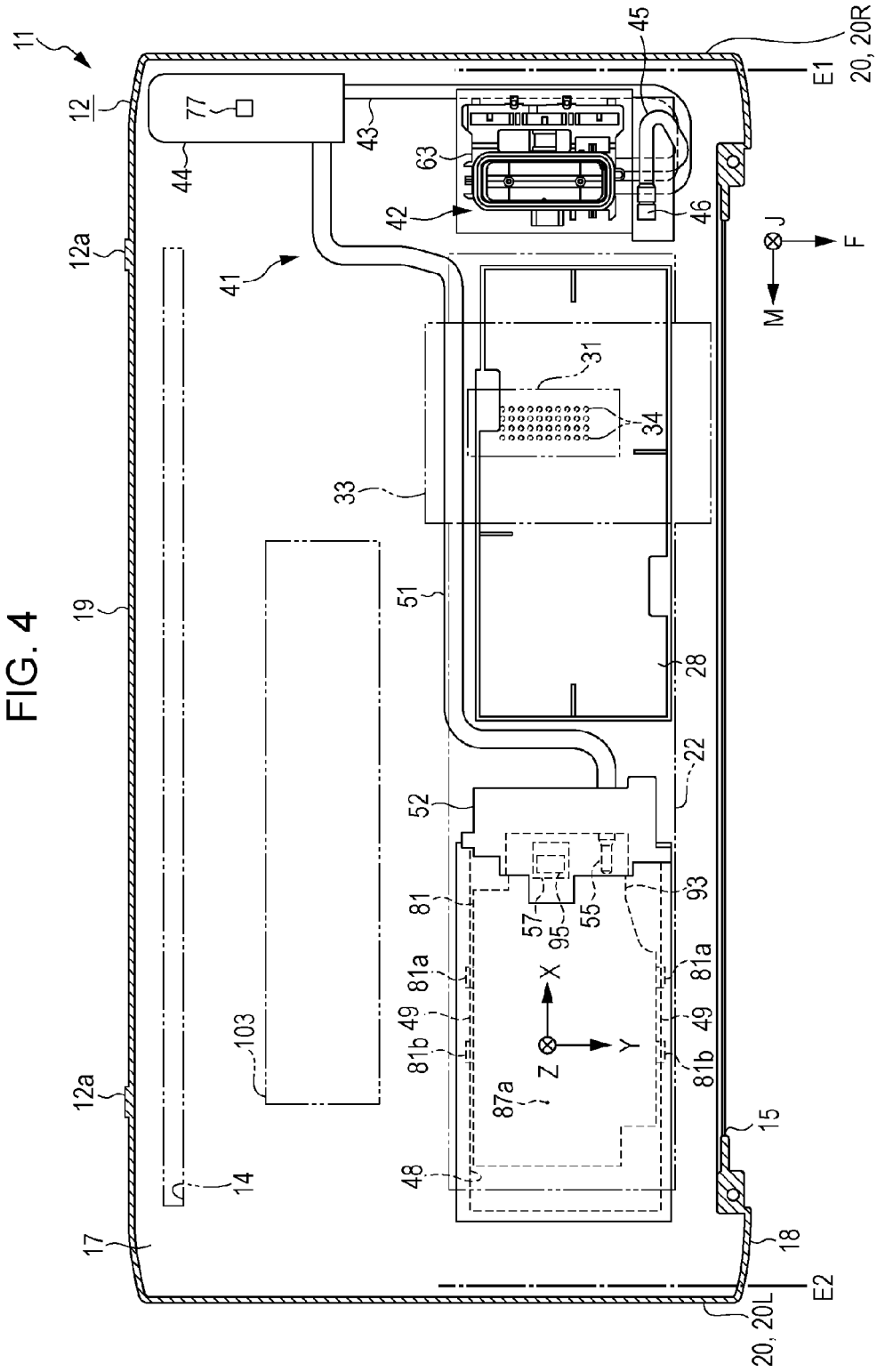
J
F
M
32
22b
27a
22a
27
28
32
22a

FIG. 4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28
22
52
81
57
95
55
93
81a
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81b
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87a
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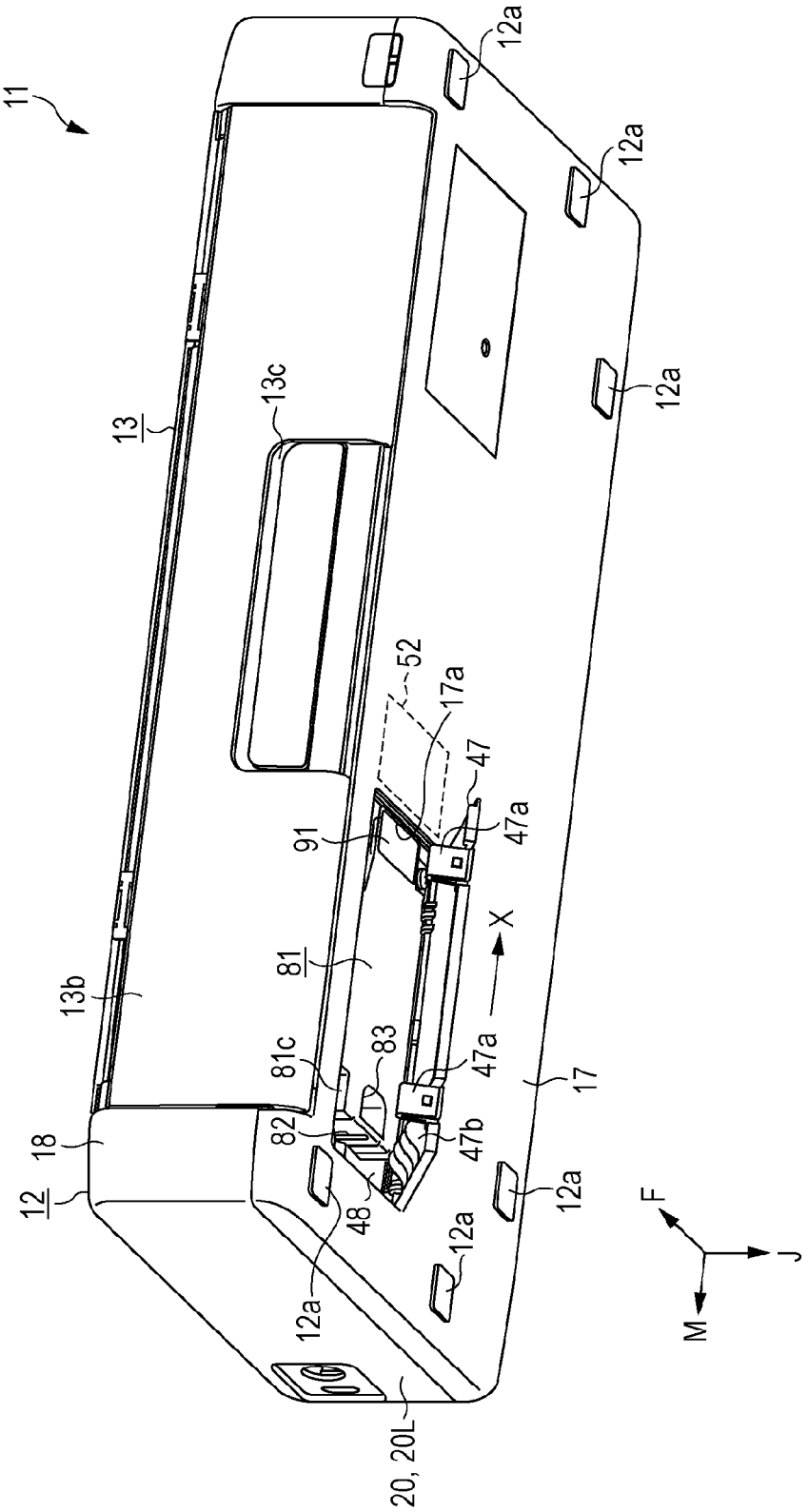
15
18
E2
20, 20L
14
17
19
X
Y
Z

FIG. 5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12a
12a
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13c
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17a
47
47a
91
X
81
13b
81c
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47a
17
82
47b
18
12
48
12a
12a
12a
F
J
M
20, 20L

FIG. 6

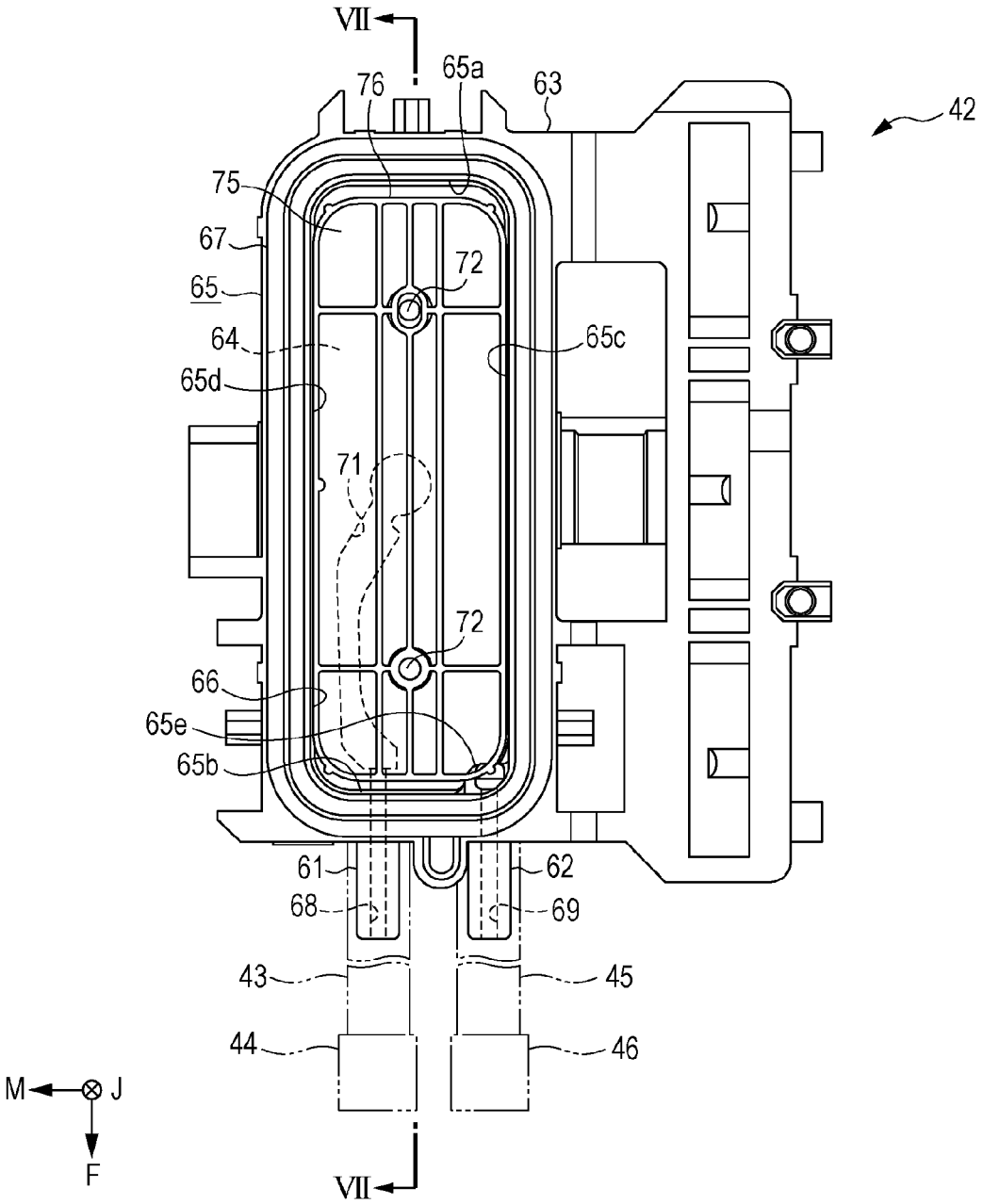

VII
76
65a
63
42
75
67
72
65
64
65c
65d
71
72
66
65e
65b
61
62
68
69
43
45
44
46
M
J
F
VII

FIG. 7

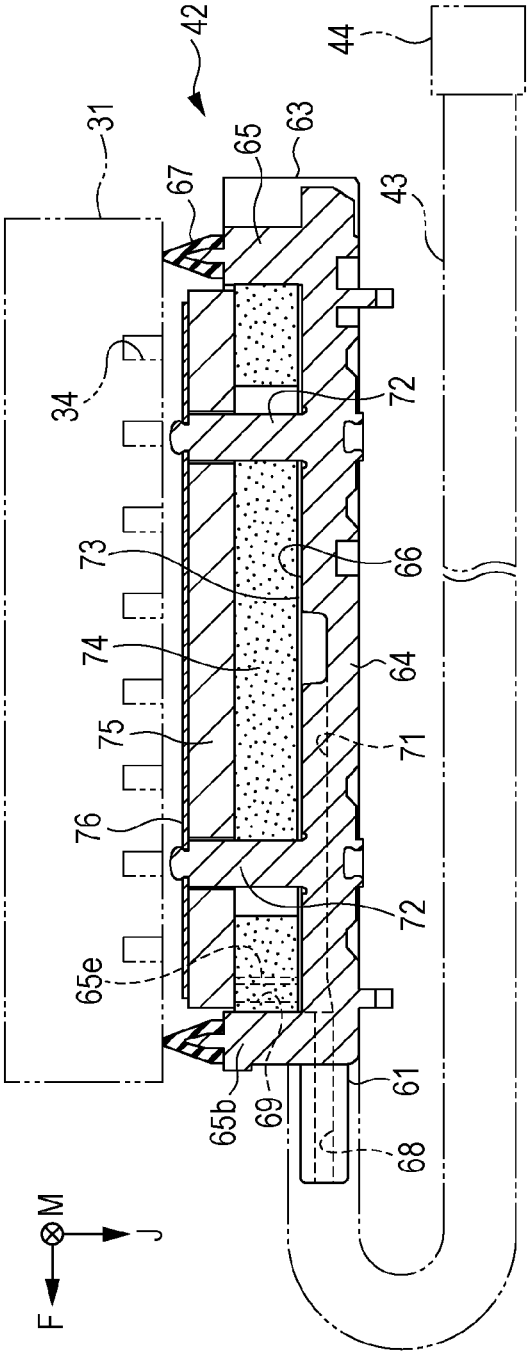
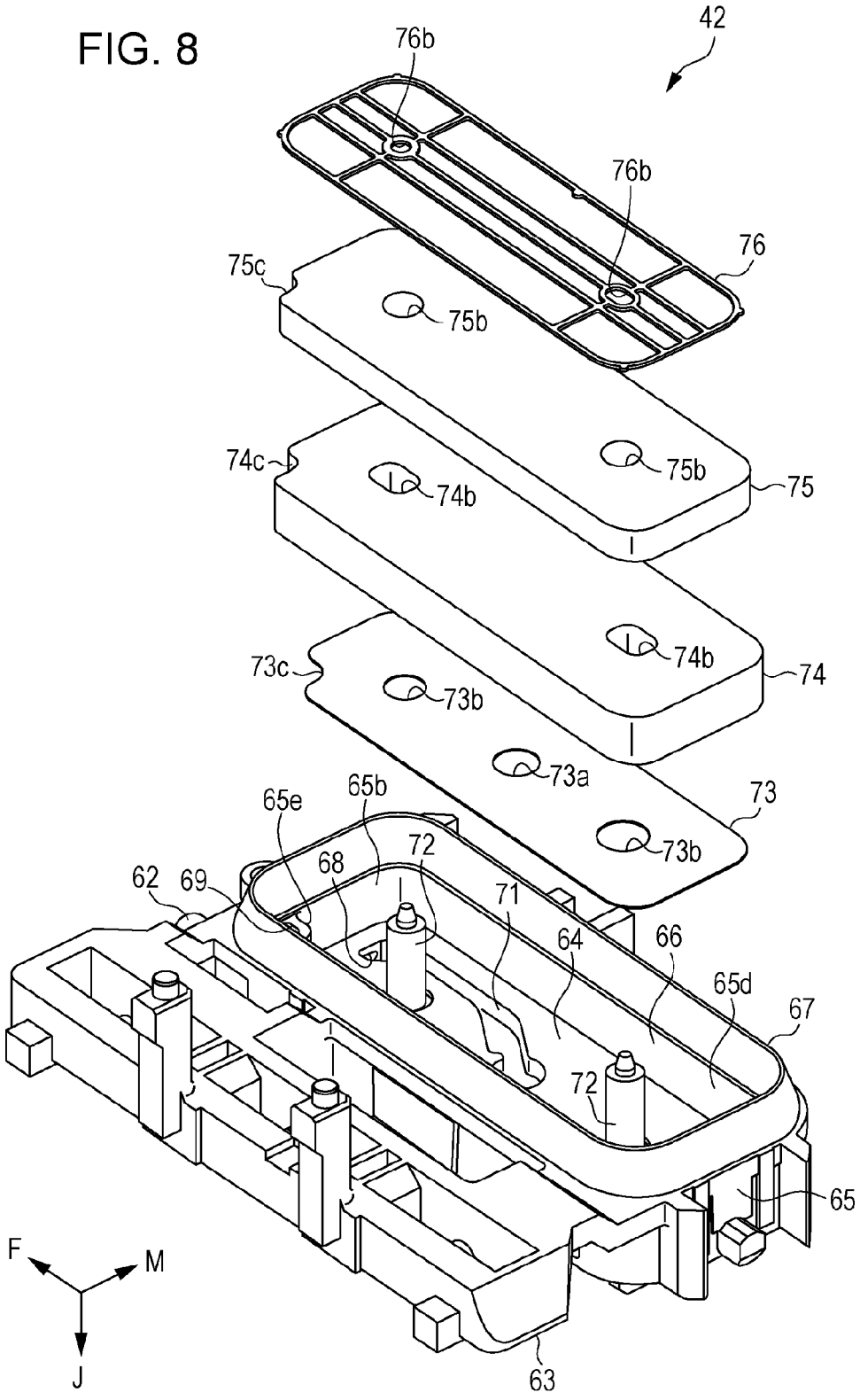


FIG. 8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76b
76b
76
75c
75b
74c
75b
75
74b
74b
74
73c
73b
73a
73
73b
65e
65b
72
68
62
69
71
64
66
65d
67
72
65
F
M
J
63

FIG. 9

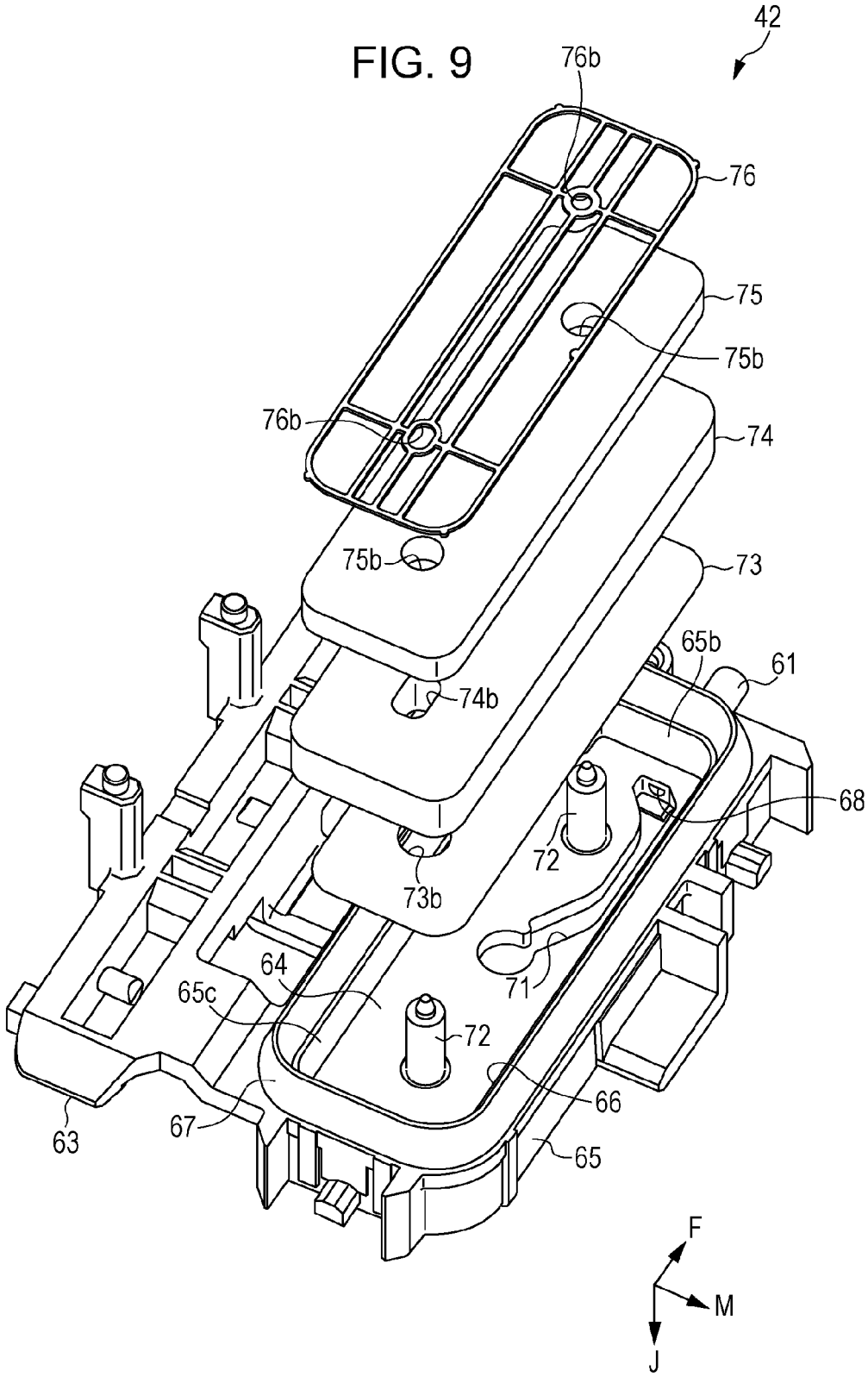
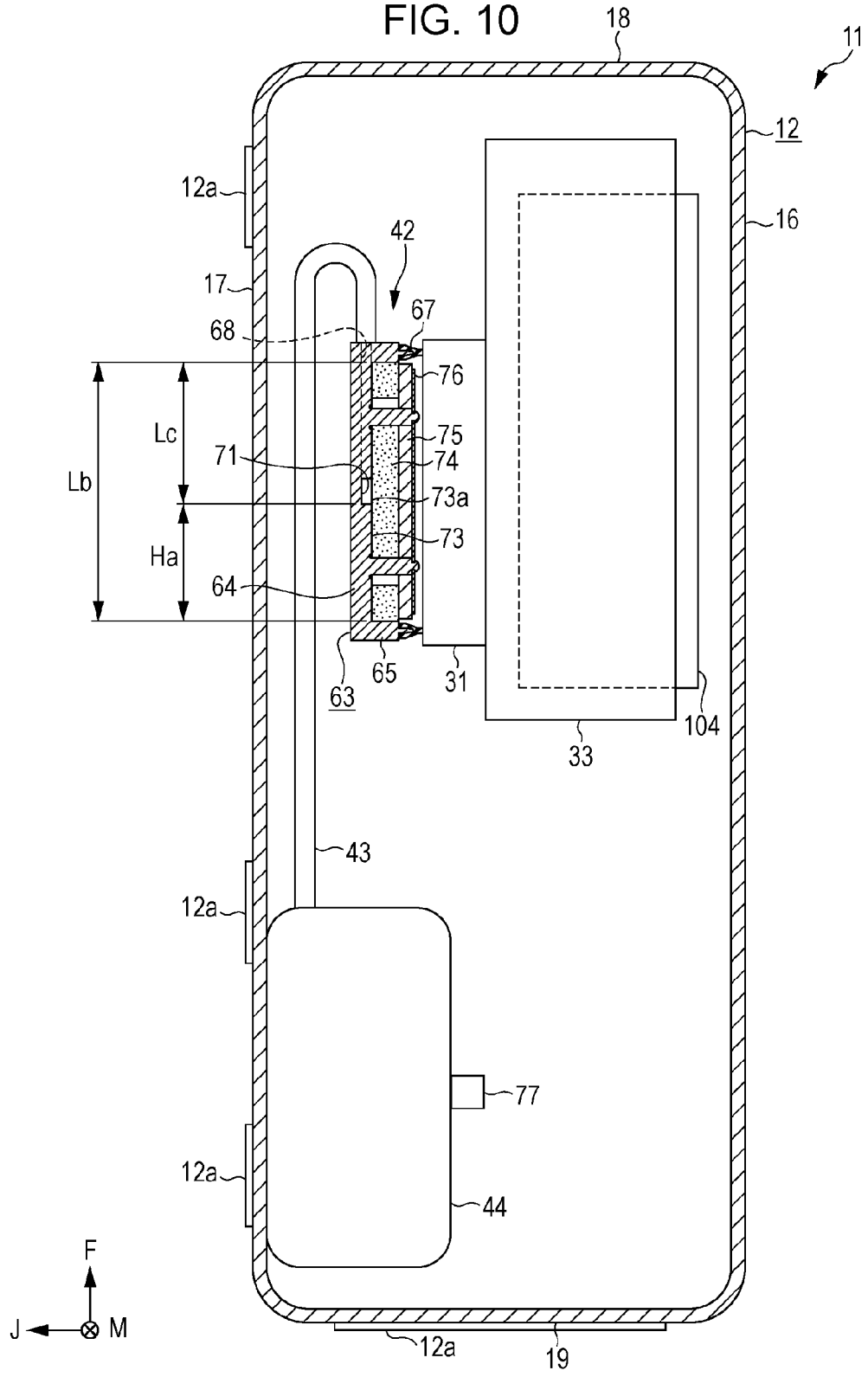

42
76b
76
75
75b
76b
74
75b
73
65b
61
74b
68
72
73b
64
65c
71
72
66
63
67
65
F
M
J

FIG. 10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12a
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42
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67
68
76
Lc
75
71
74
Lb
73a
73
Ha
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63
104
33
43
12a
77
12a
44
F
J
M
12a
19

FIG. 11A

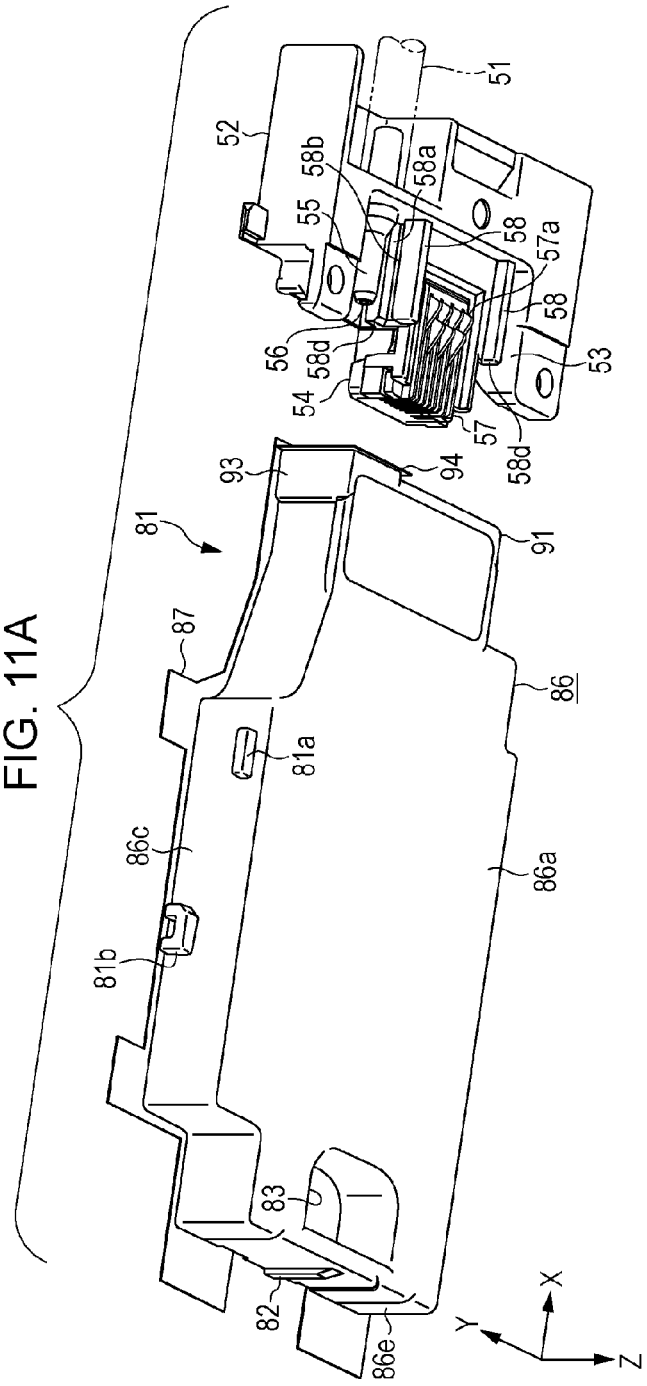


FIG. 11B

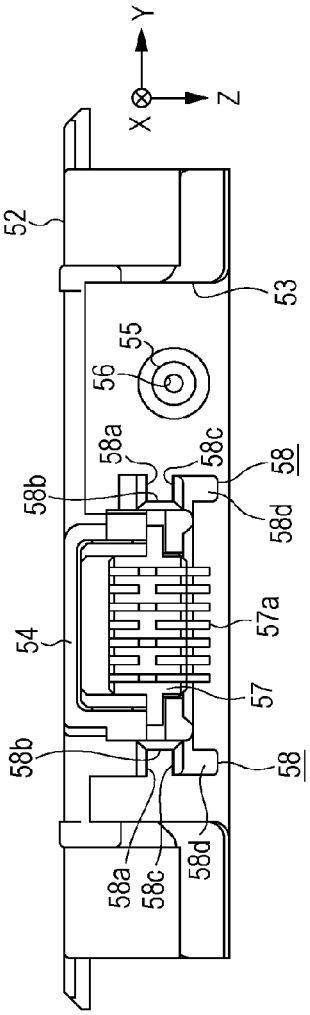
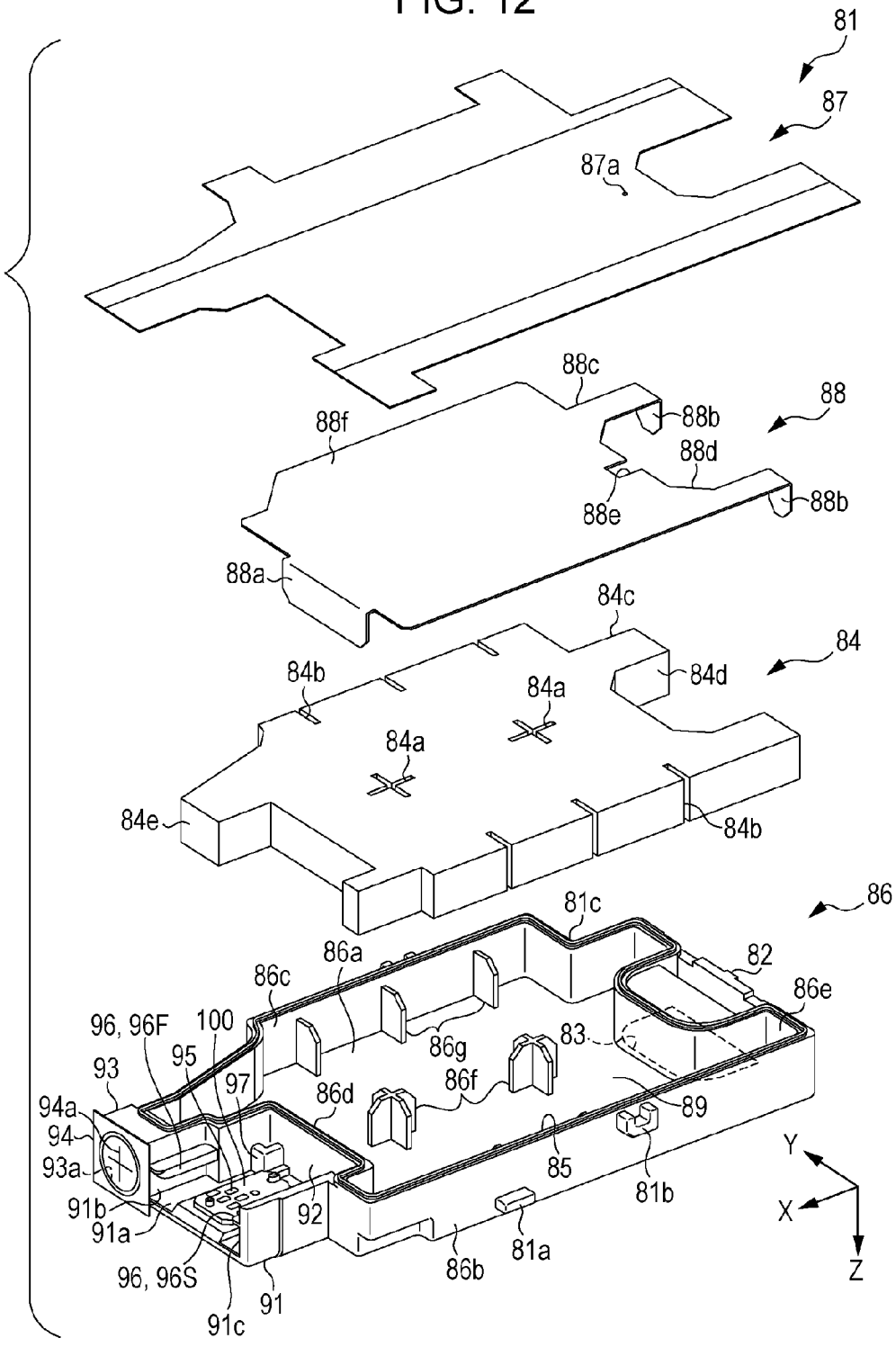


FIG. 12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87
87a
88c
88
88f
88b
88d
88e
88b
88a
84c
84
84b
84d
84a
84a
84e
84b
86
81c
86a
82
86c
86e
96, 96F
100
95
93
97
86g
83
86d
86f
89
94a
94
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85
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91b
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81b
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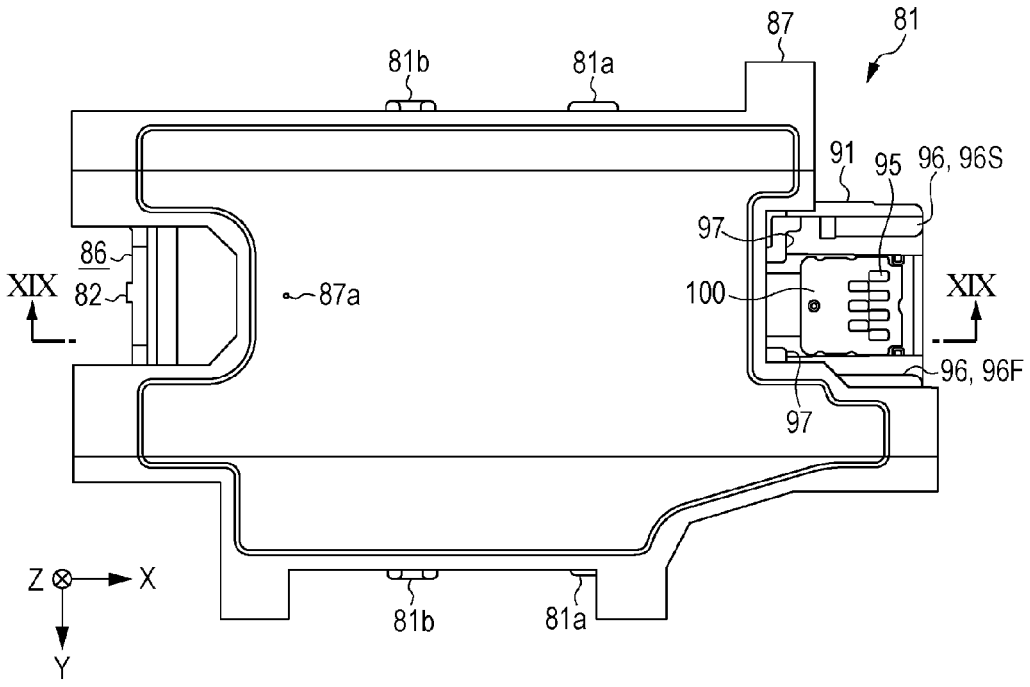
96, 96S
91
86b
81a
91c
Z

FIG. 13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Z
X
Y
81b
81a

FIG. 14

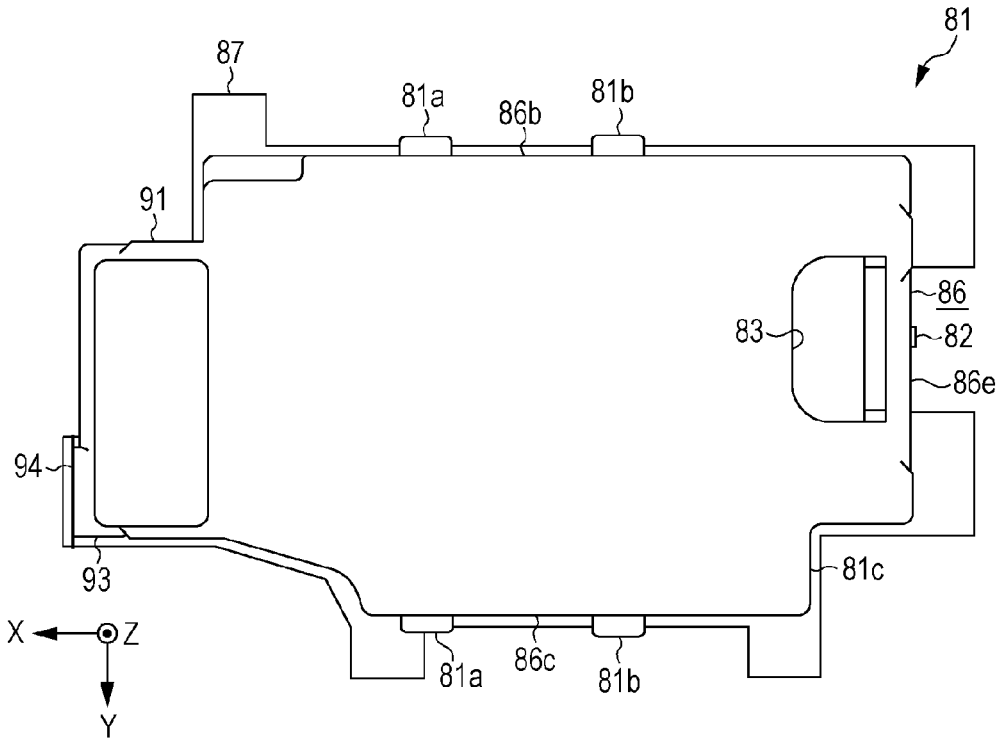
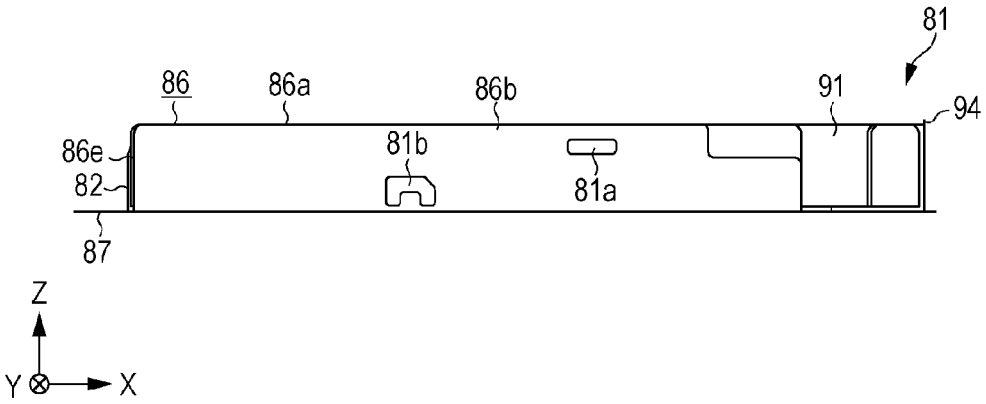


FIG. 15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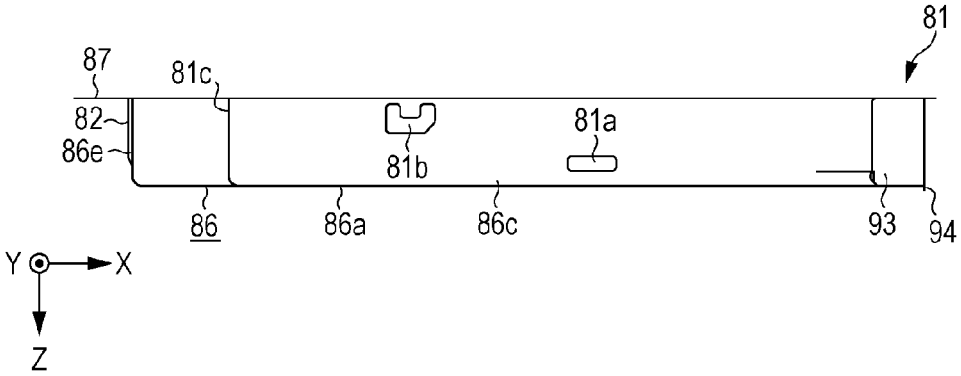
94
86e
82
87
81b
81a
Z
Y
X

FIG. 16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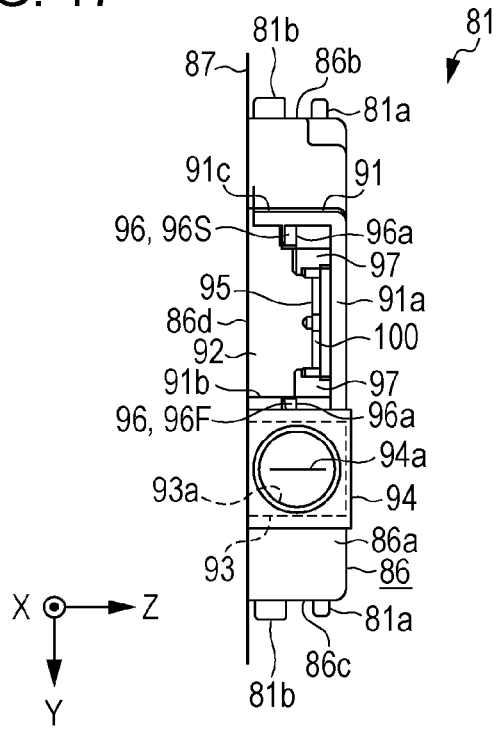
86e
81b
81a
86
86a
86c
93
94
Y
X
Z

FIG. 17


81
81b
87
86b
81a
91c
91
96, 96S
96a
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91a
86d
100
92
91b
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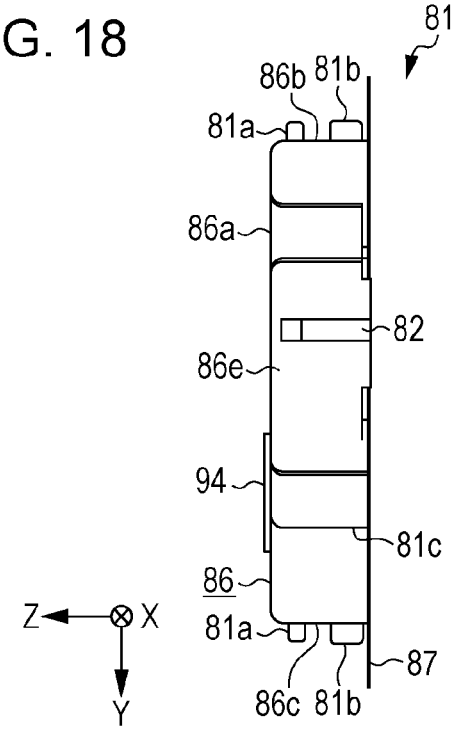
94
86a
93
86
81a
86c
81b
X
Z
Y

FIG. 18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81c
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81a
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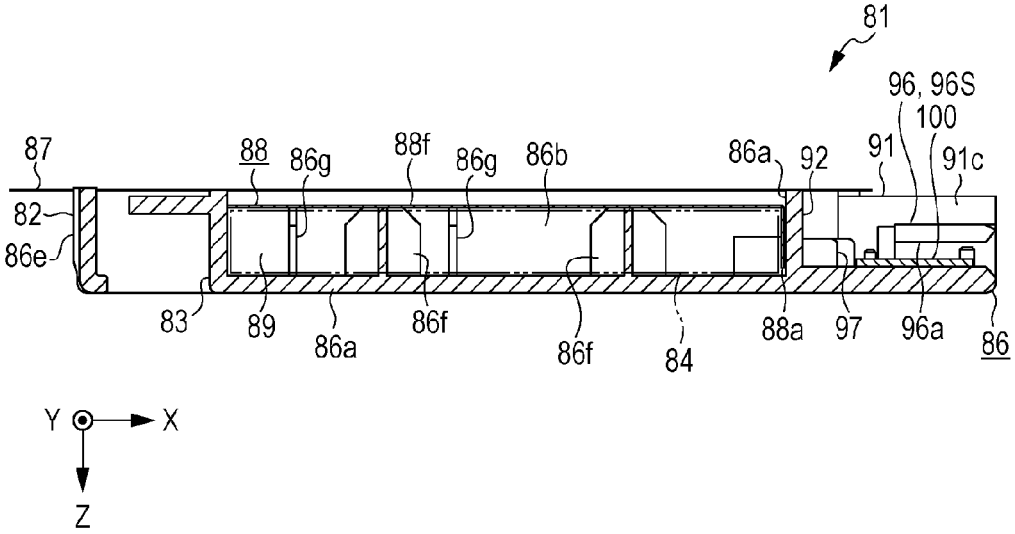
86c
81b
Z
X
Y

FIG. 19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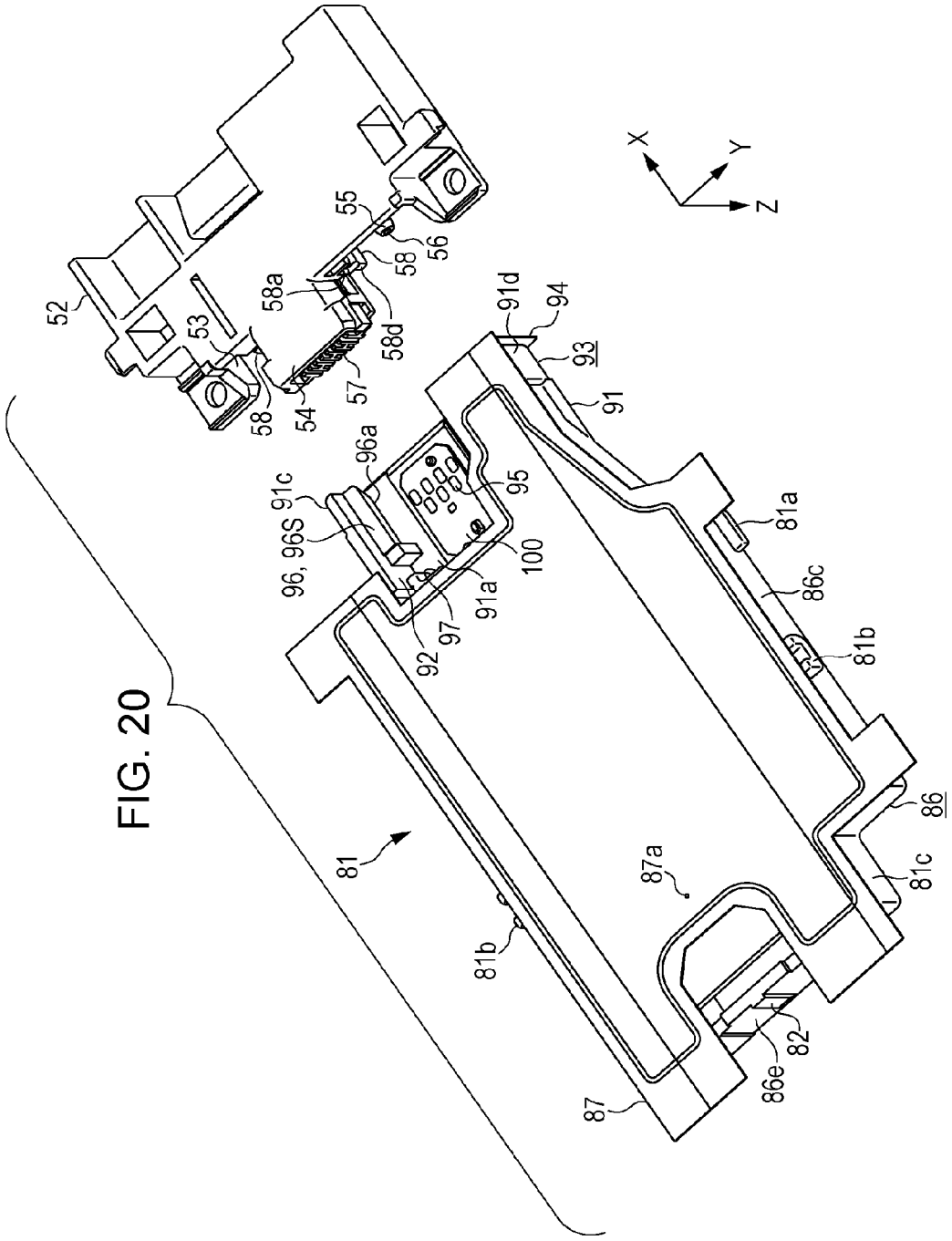
X
Y
Z
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91c
96, 96S
95
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81b
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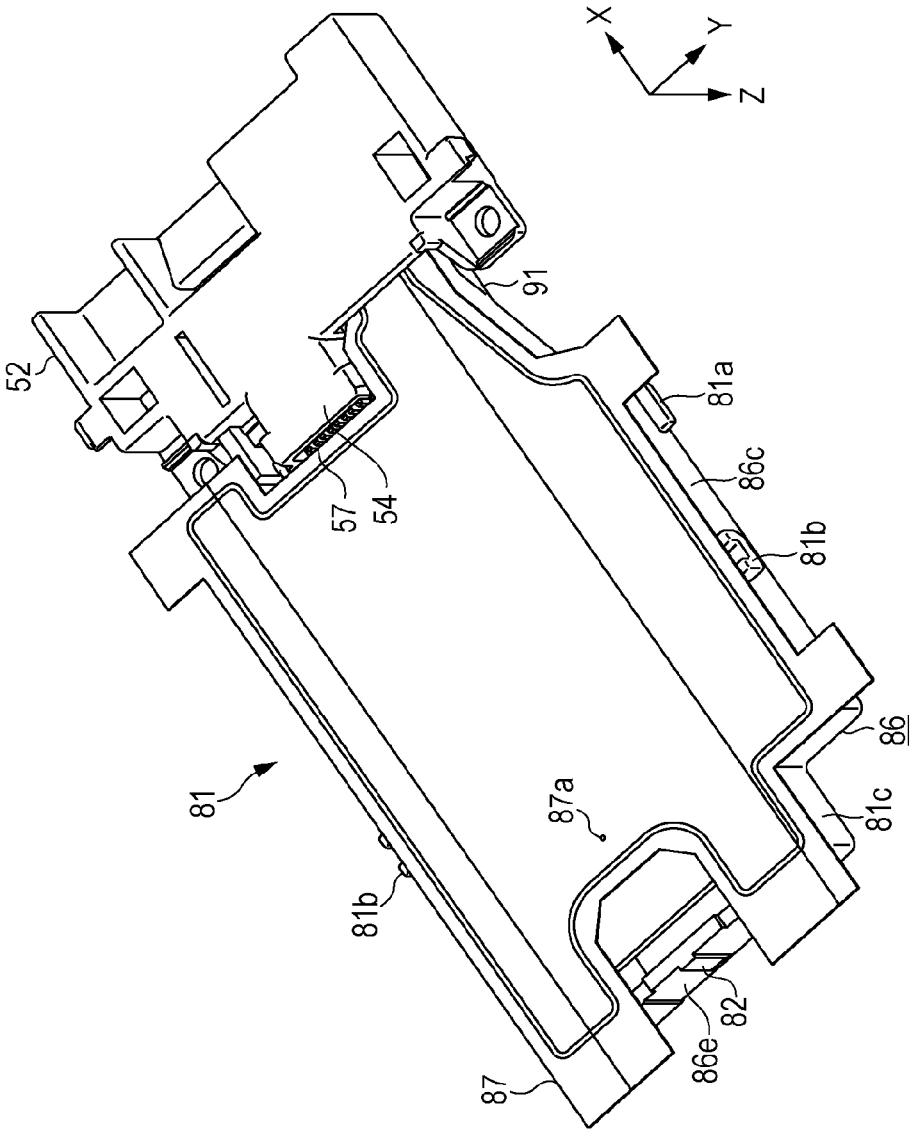
87

FIG. 20

FIG. 21



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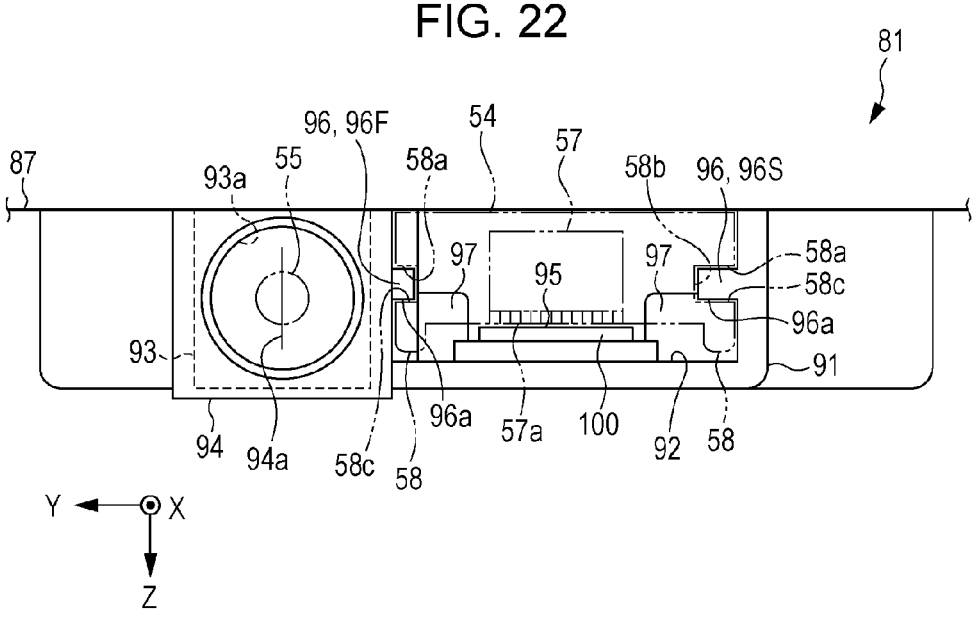
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91
94
94a
58c
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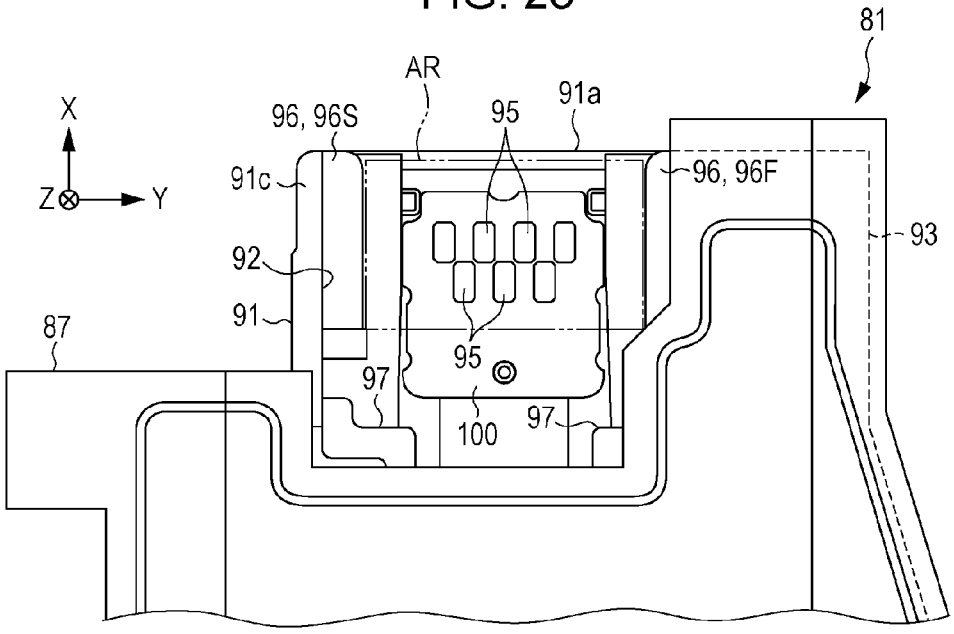
96a
57a
100
92
58
Y
X
Z

FIG. 23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100

FIG. 24

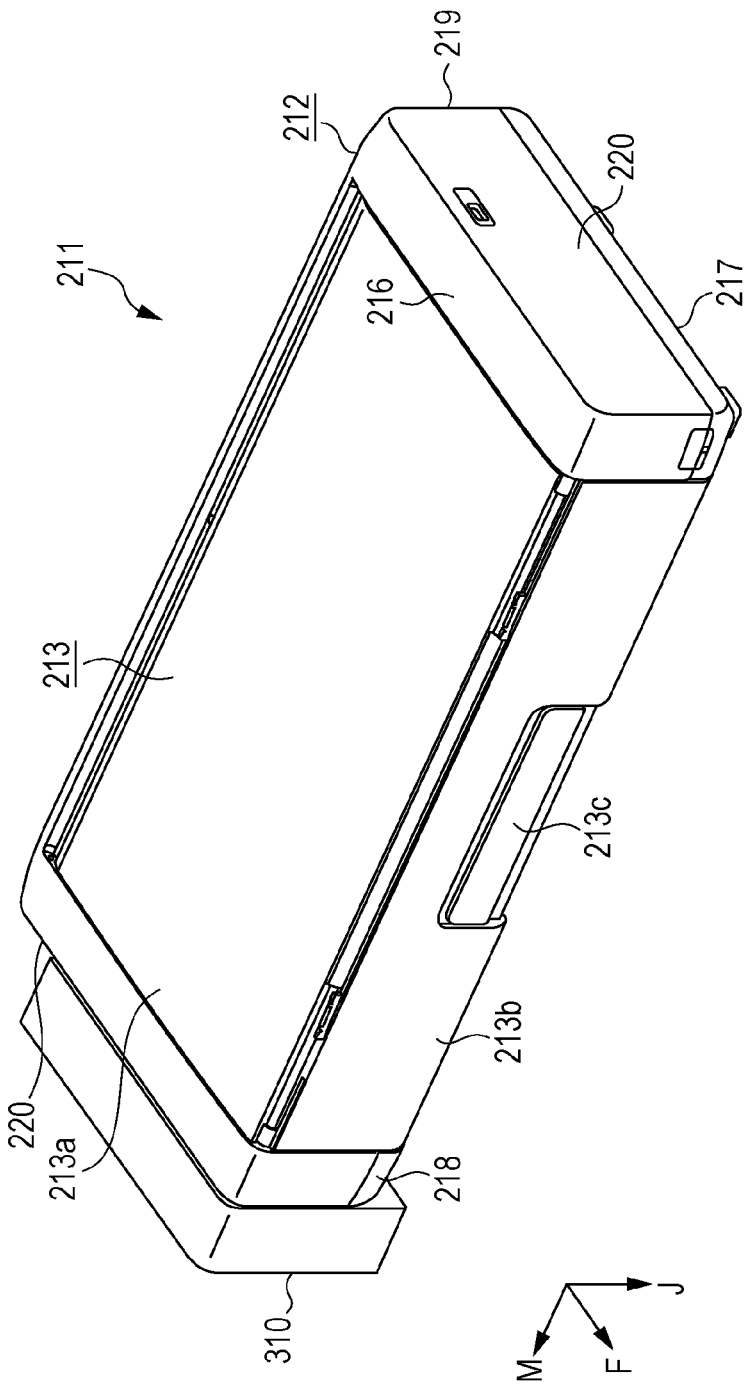
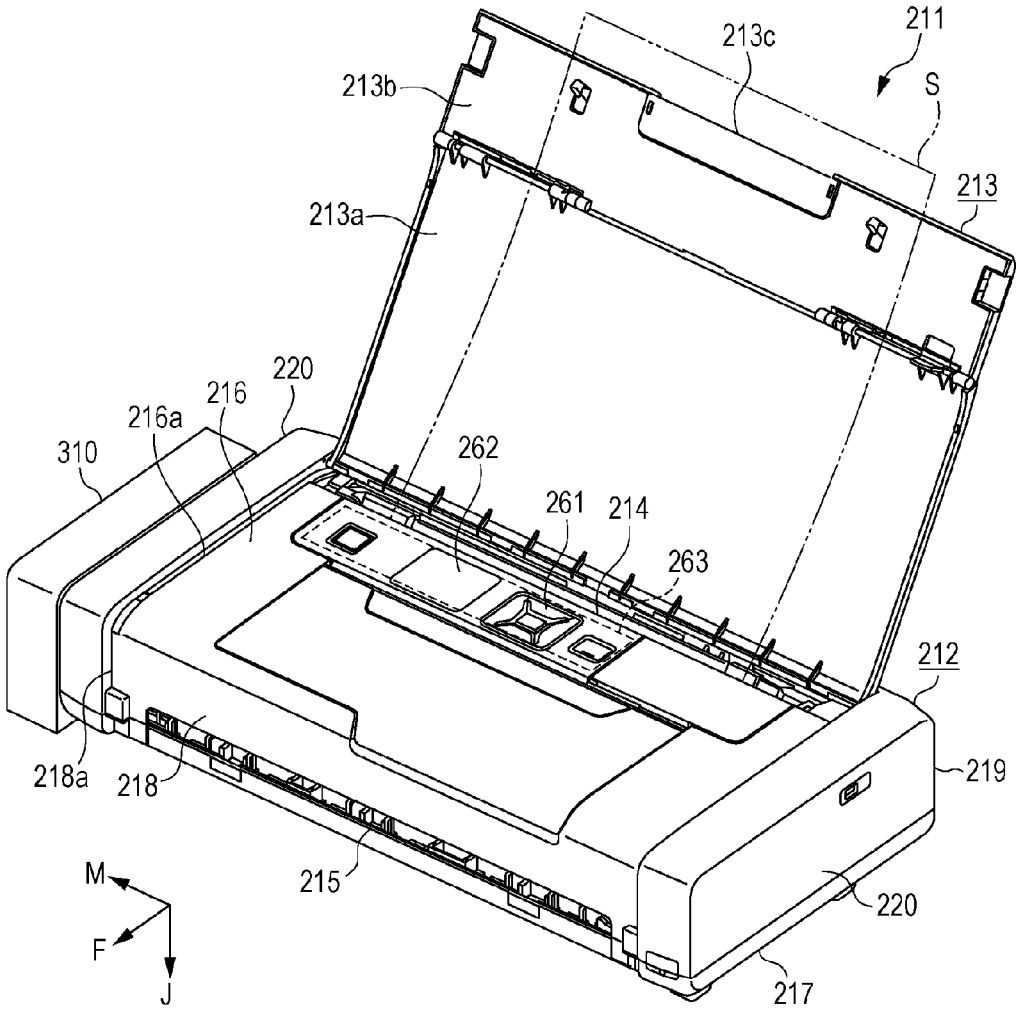


FIG. 25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213c
213b
S
213
213a
220
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214
263
212
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218a
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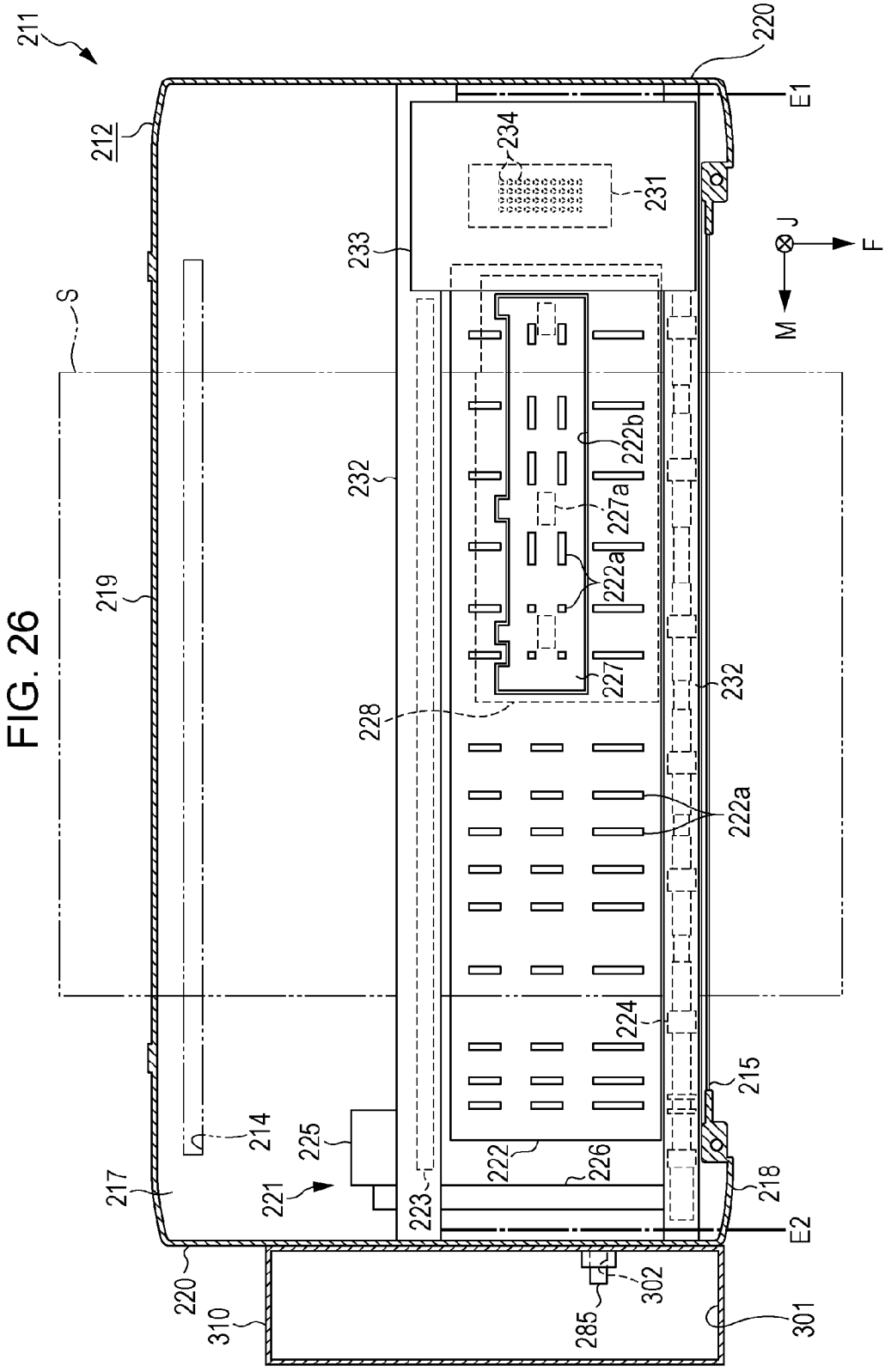
215
220
217
M
F
J

FIG. 26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220
E1
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M
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232
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222a
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223
E2
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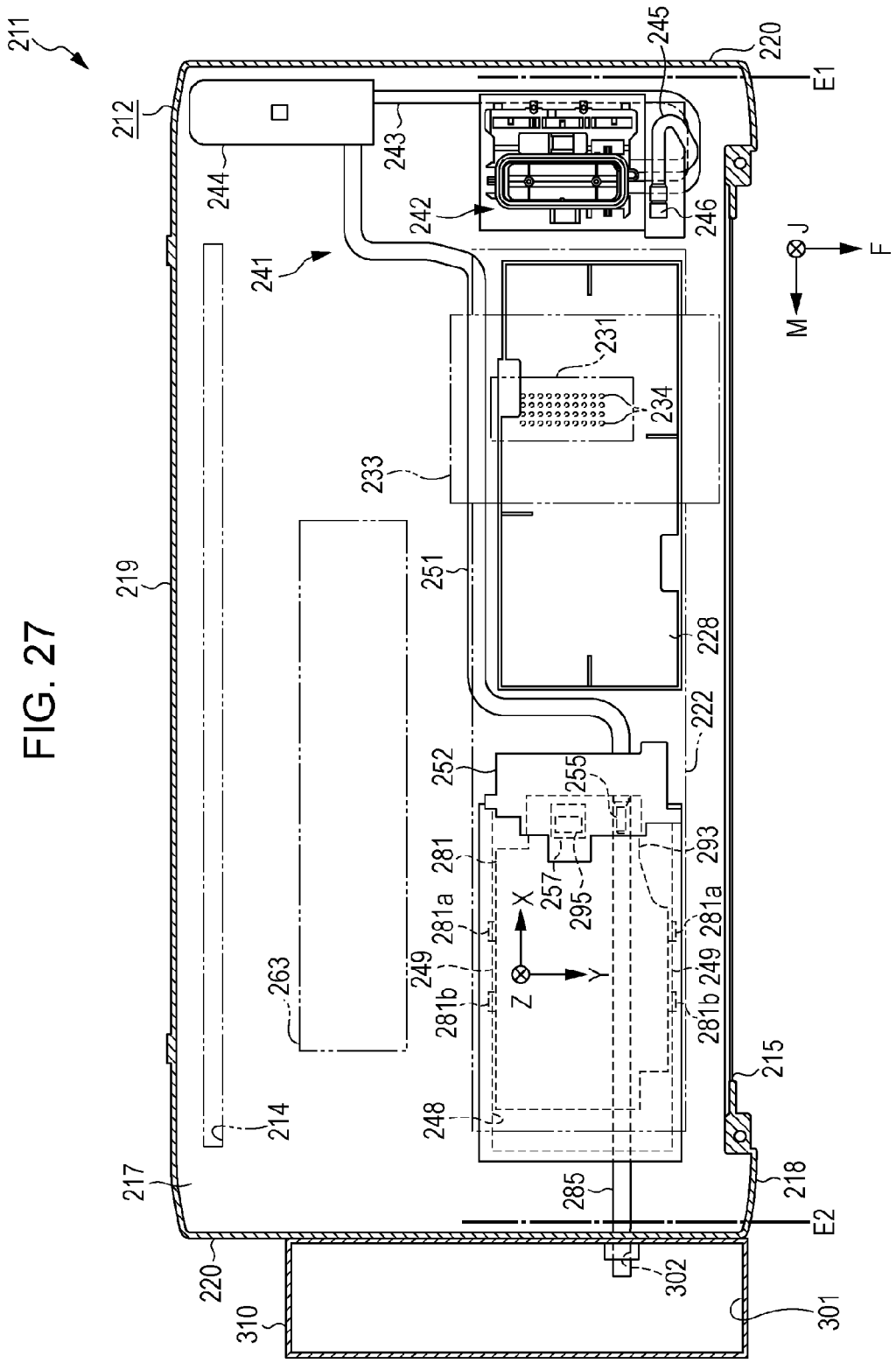
310
285
302
301

FIG. 27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257
295
281a
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281b
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217
218
285
E2
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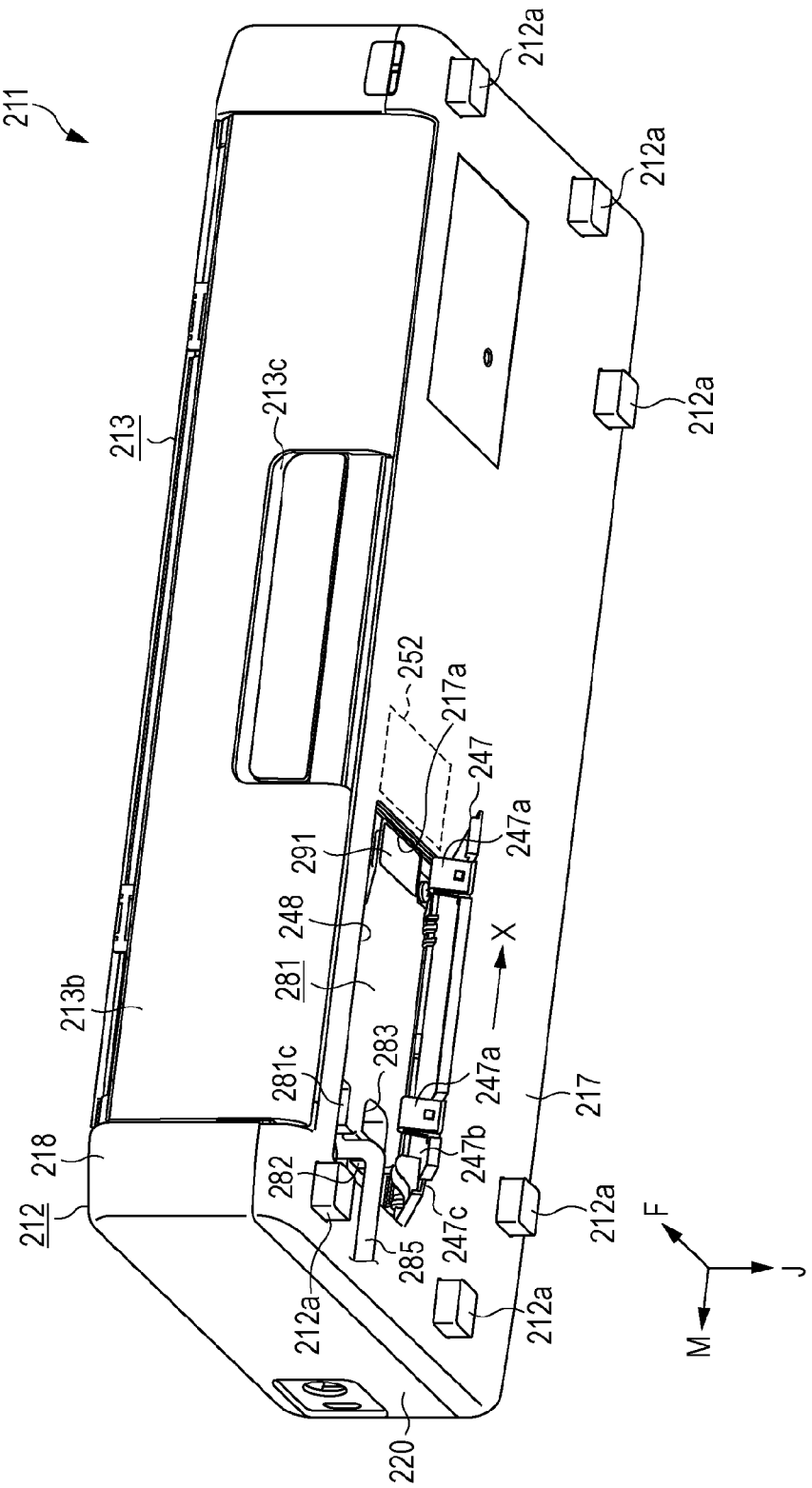
302
310
301

FIG. 28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212a
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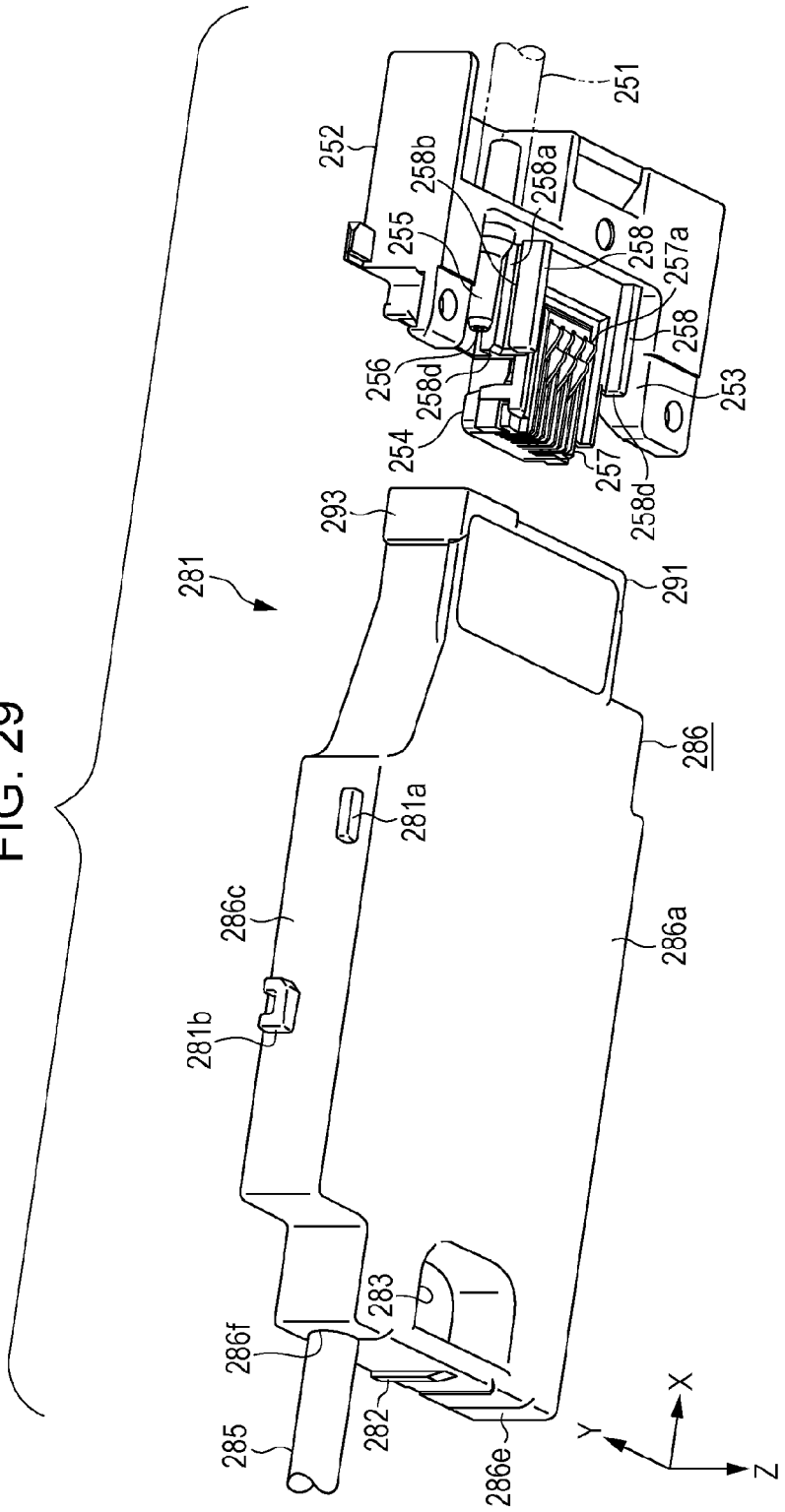
FIG. 29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258d
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258d
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281a
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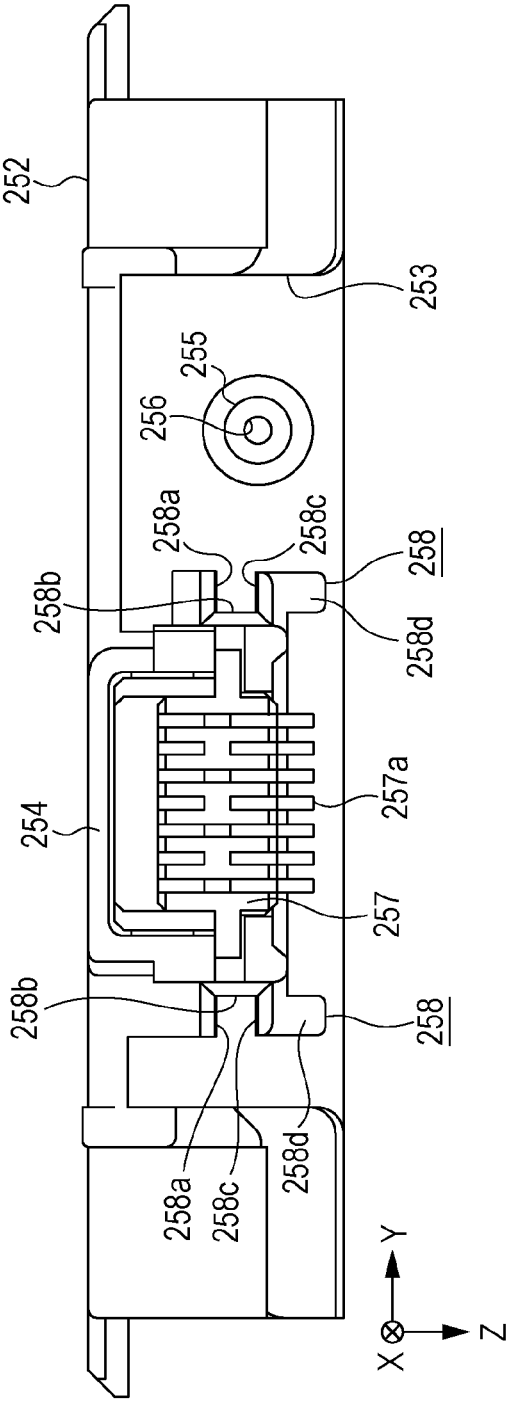
286a
281b
283
286f
285
282
286e
X
Y
Z

FIG. 30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258a
258c
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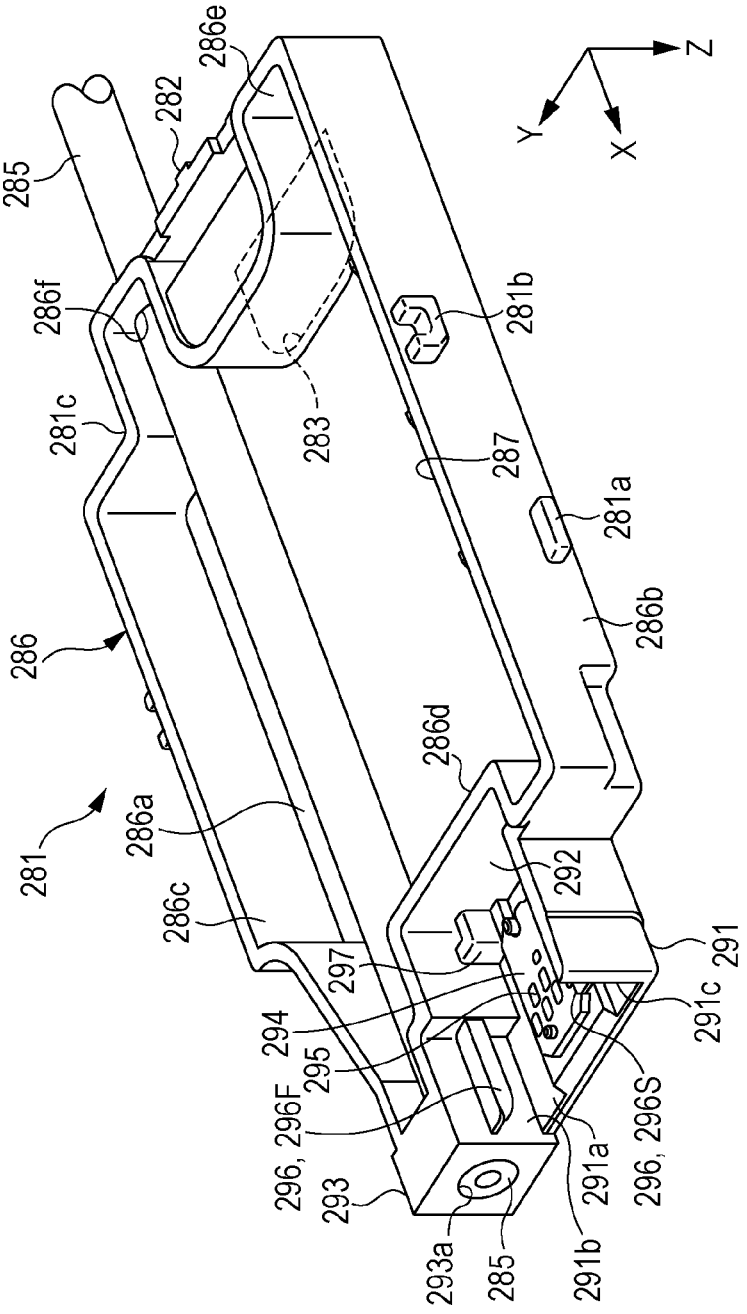
Y
X
Z

FIG. 31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291a
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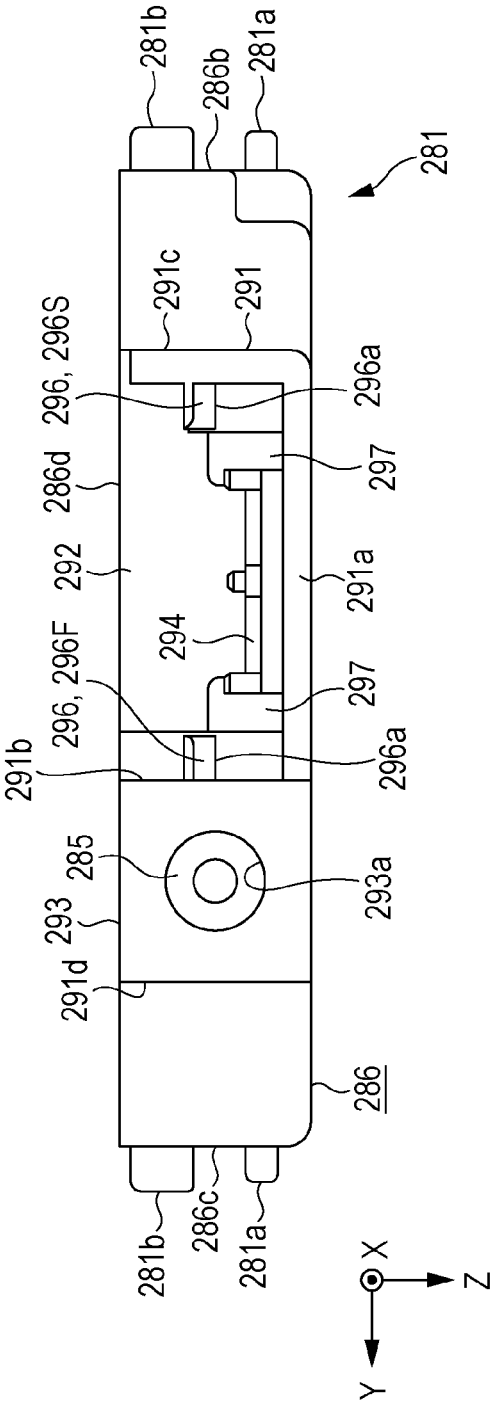
FIG. 32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296, 296F
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296a
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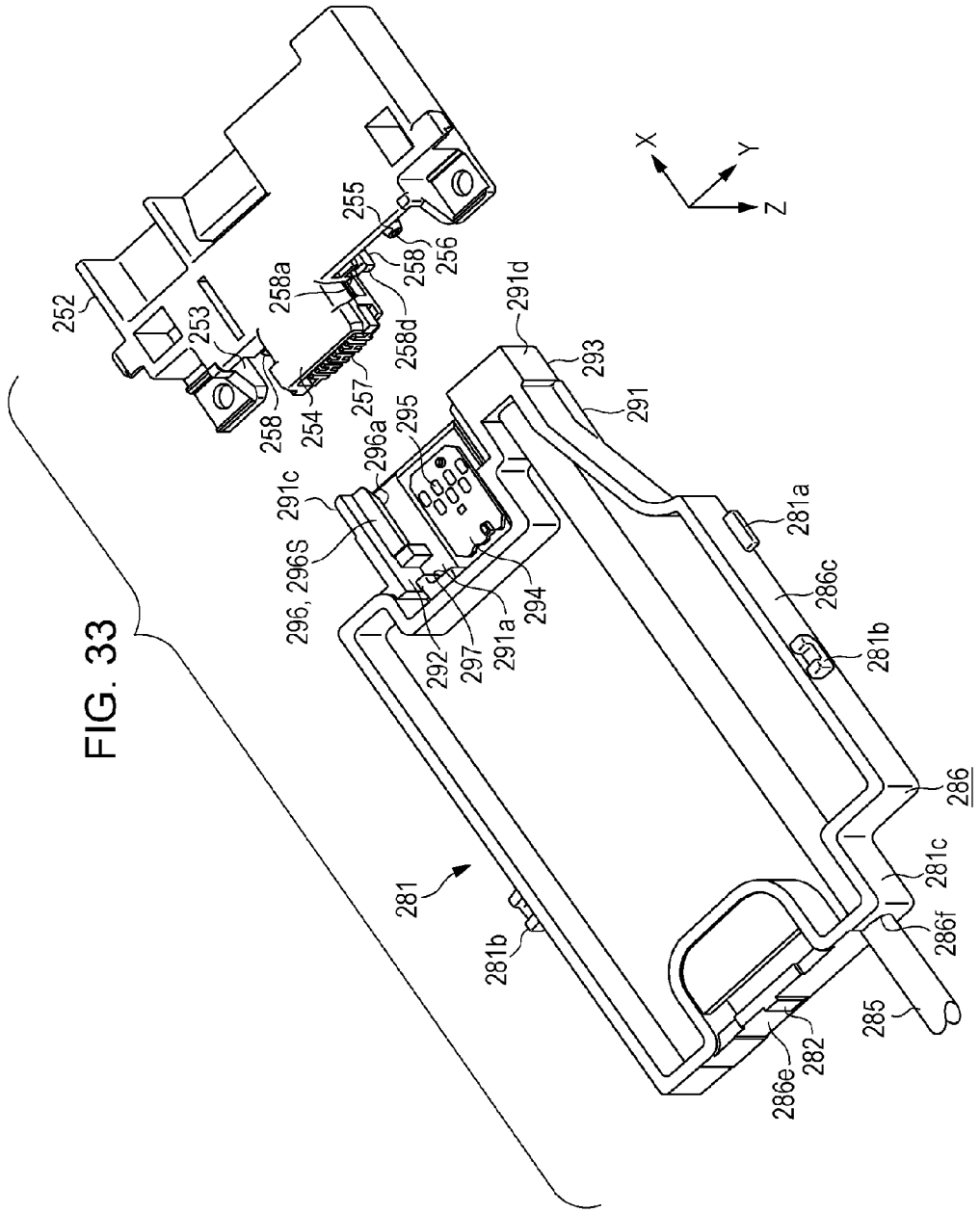
293a
293
291d
286
281b
286c
281a
X
Z
Y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297
291a
294
291d
293
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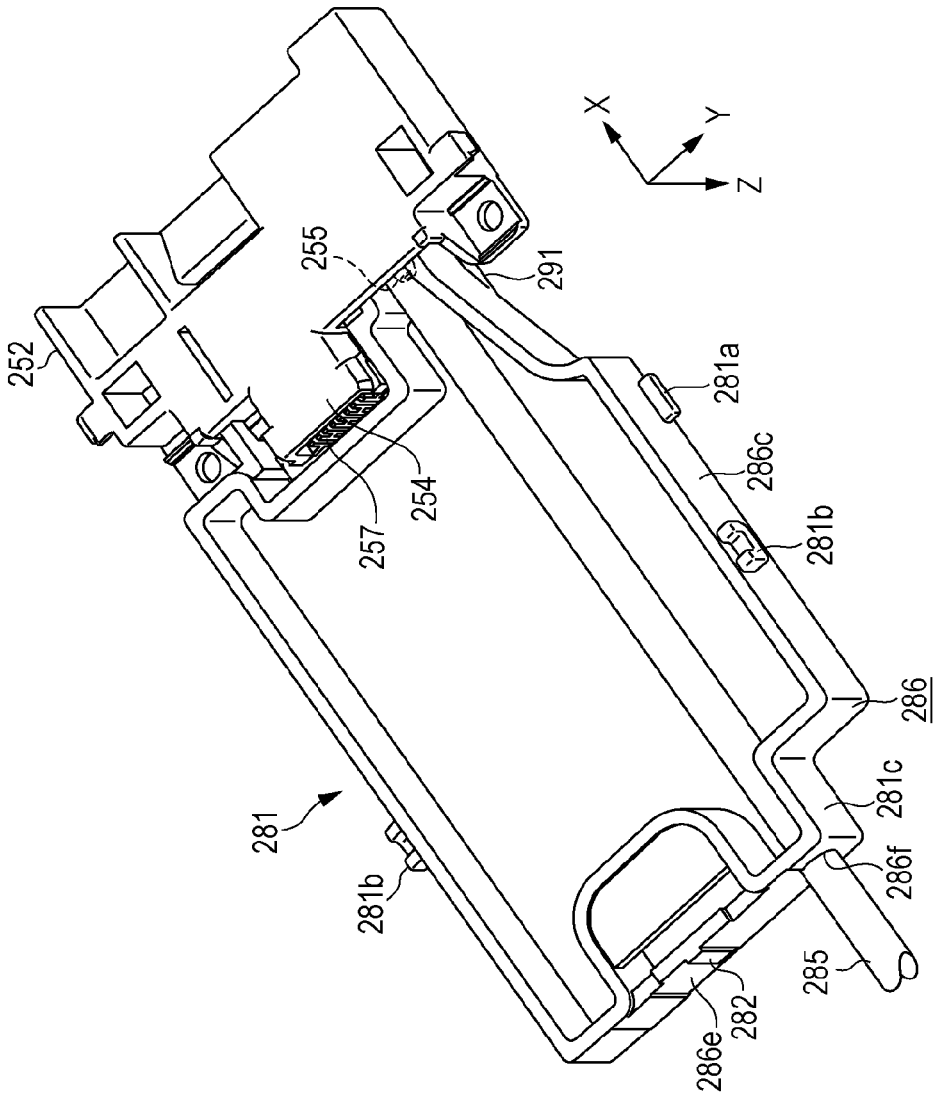
281a
286c
281b
286
281c
286f
285
282
286e
281
281b

FIG. 33

FIG. 34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286
281c
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281b
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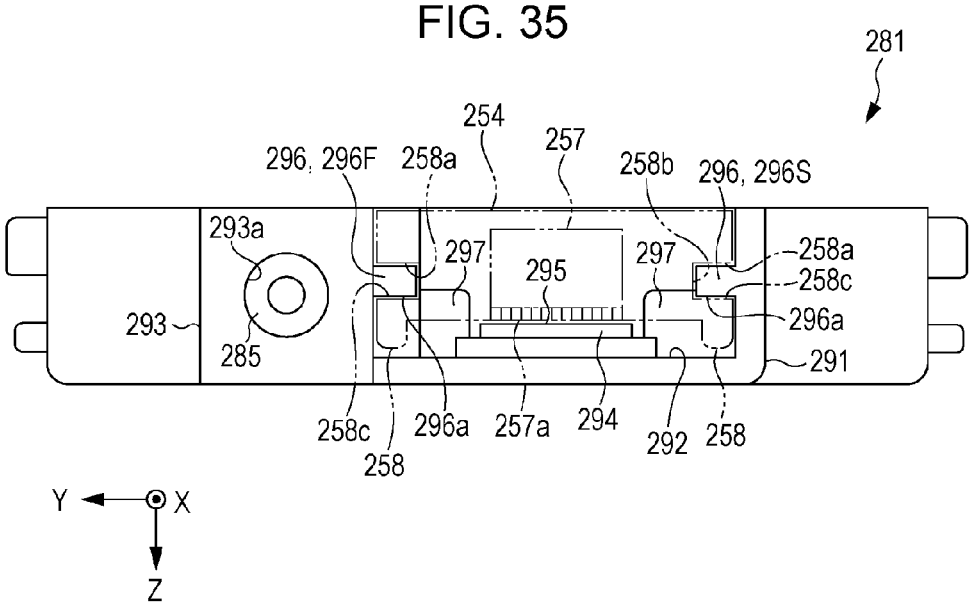
282
286e

FIG. 35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258
258
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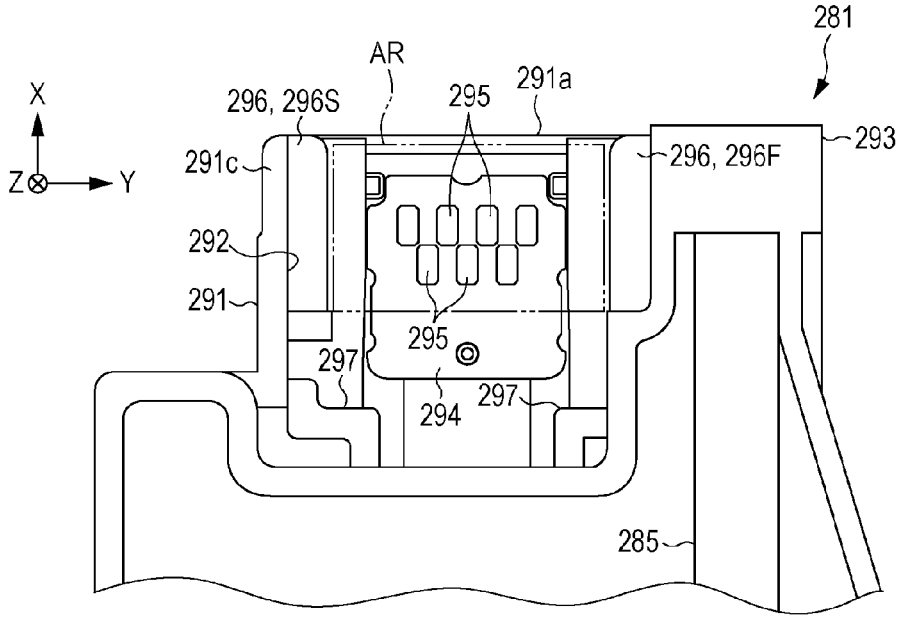
X
Z

FIG. 36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294
285

FIG. 37

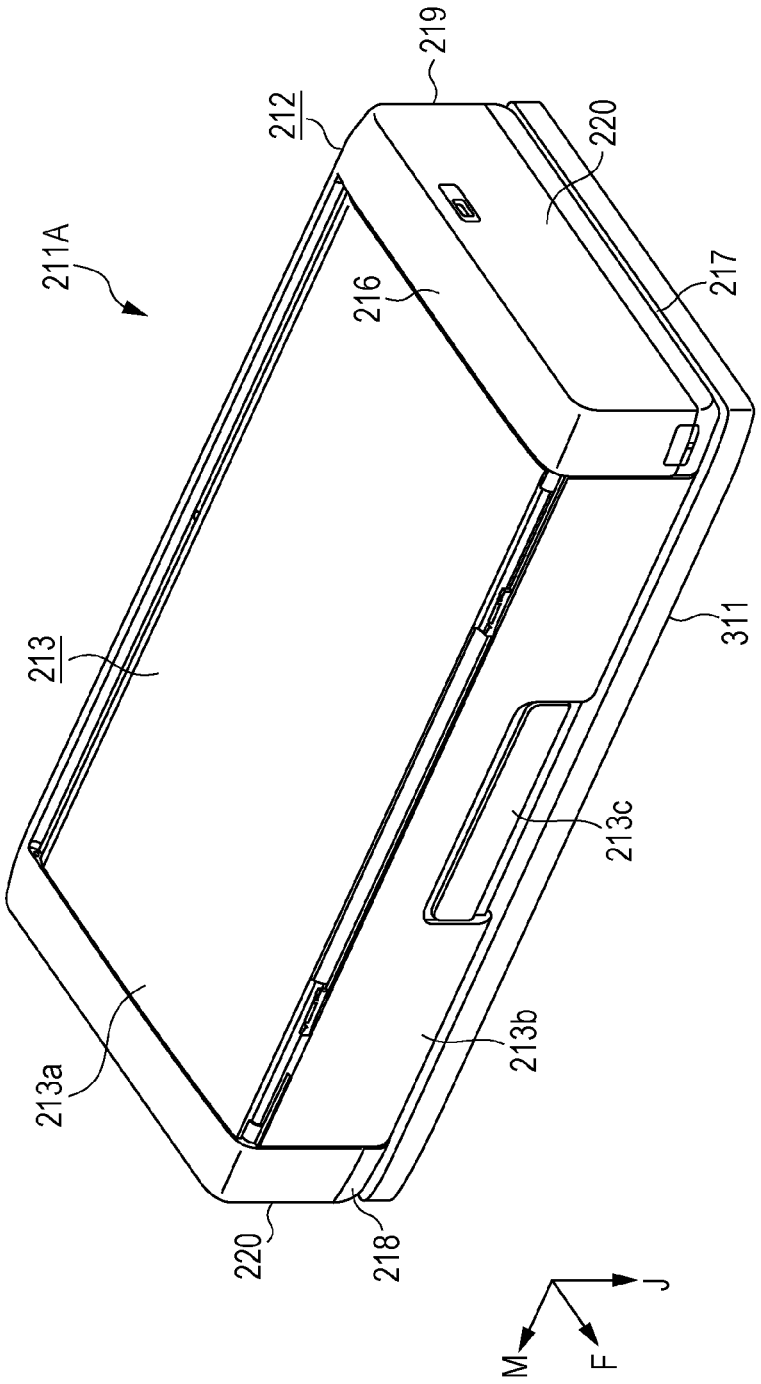
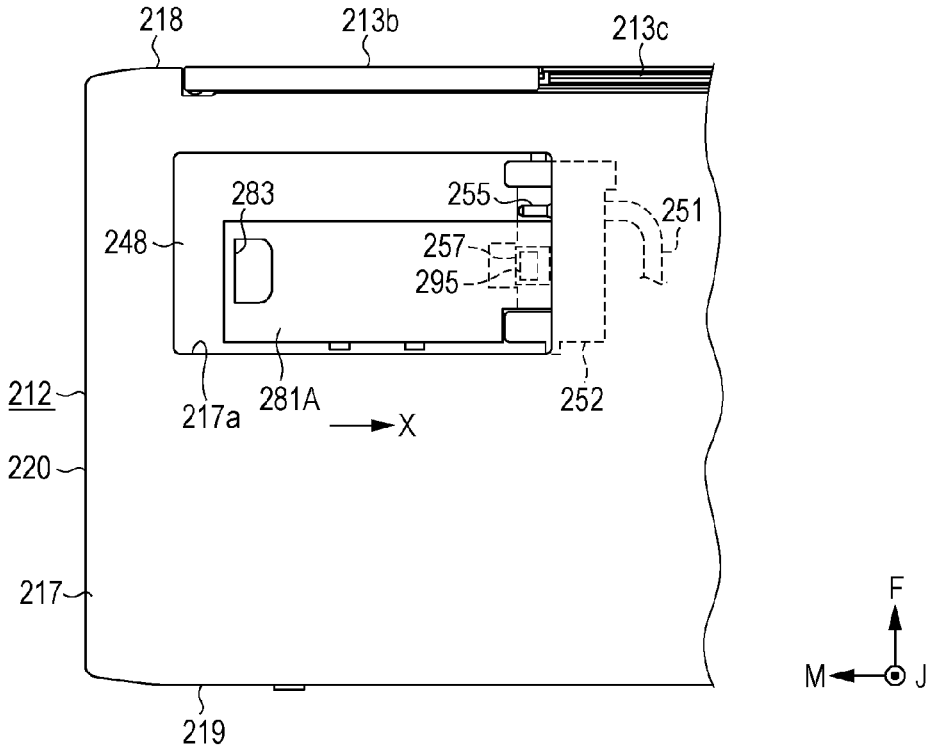


FIG. 38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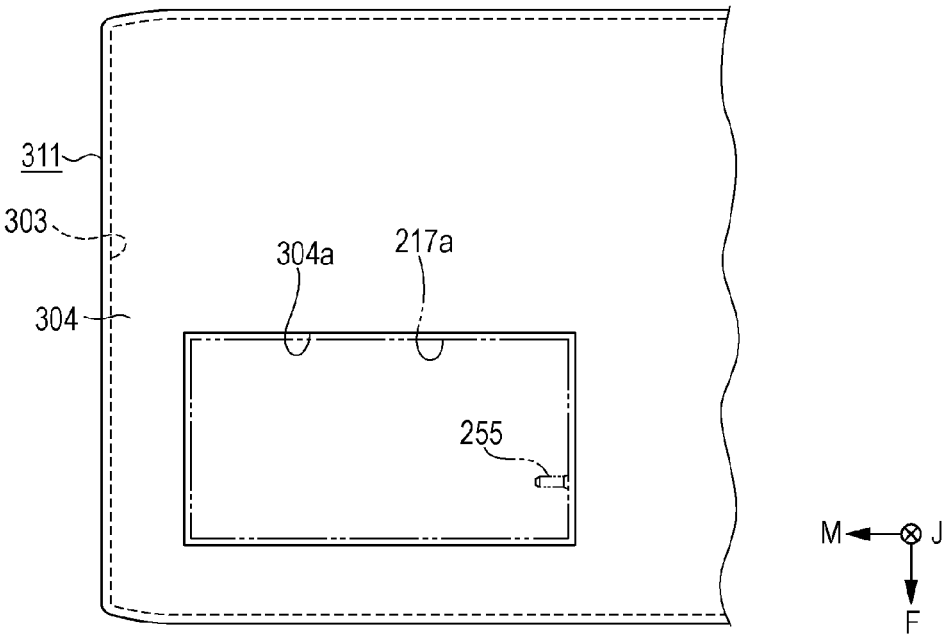
219
F
M
J

FIG. 39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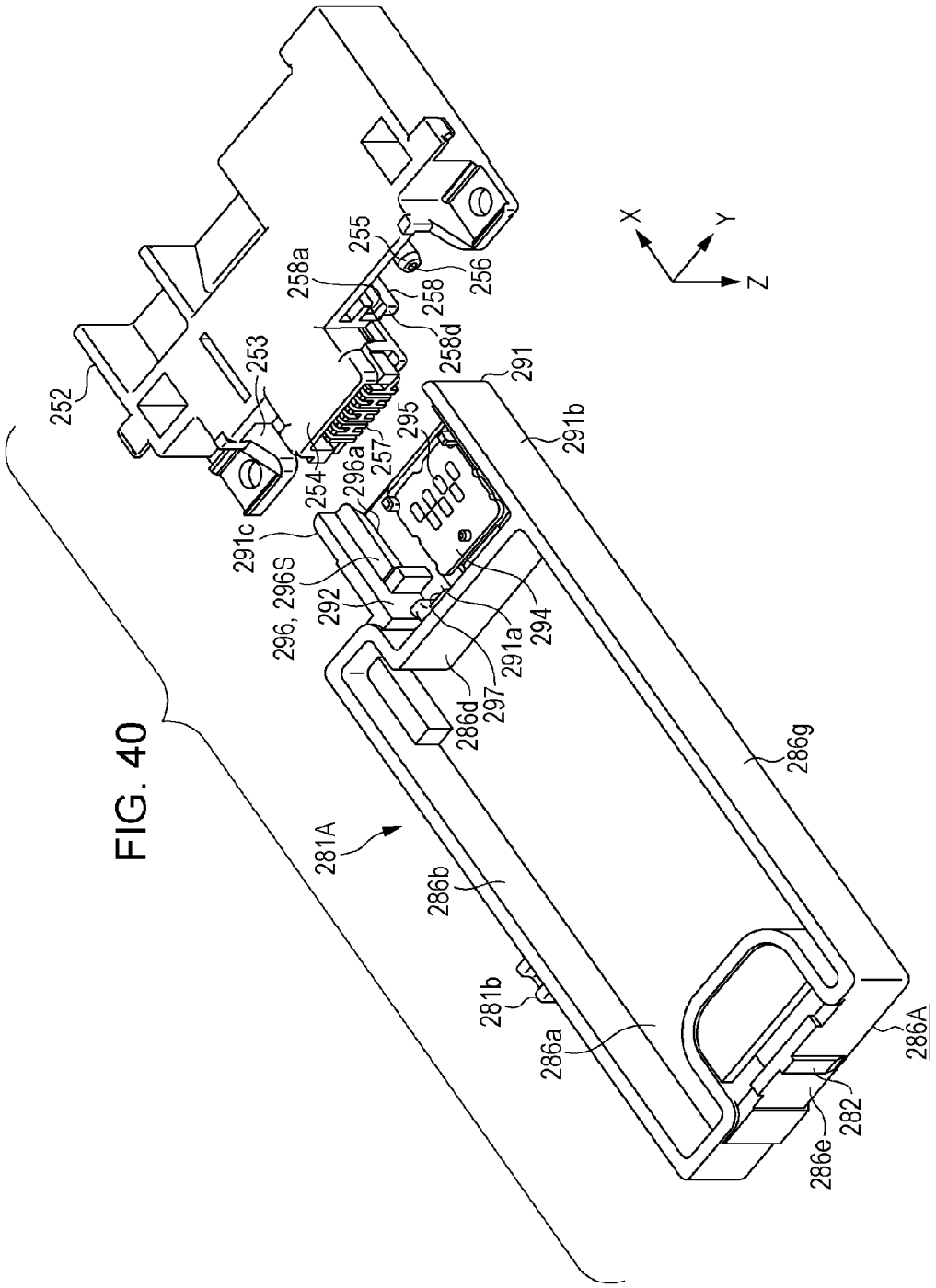
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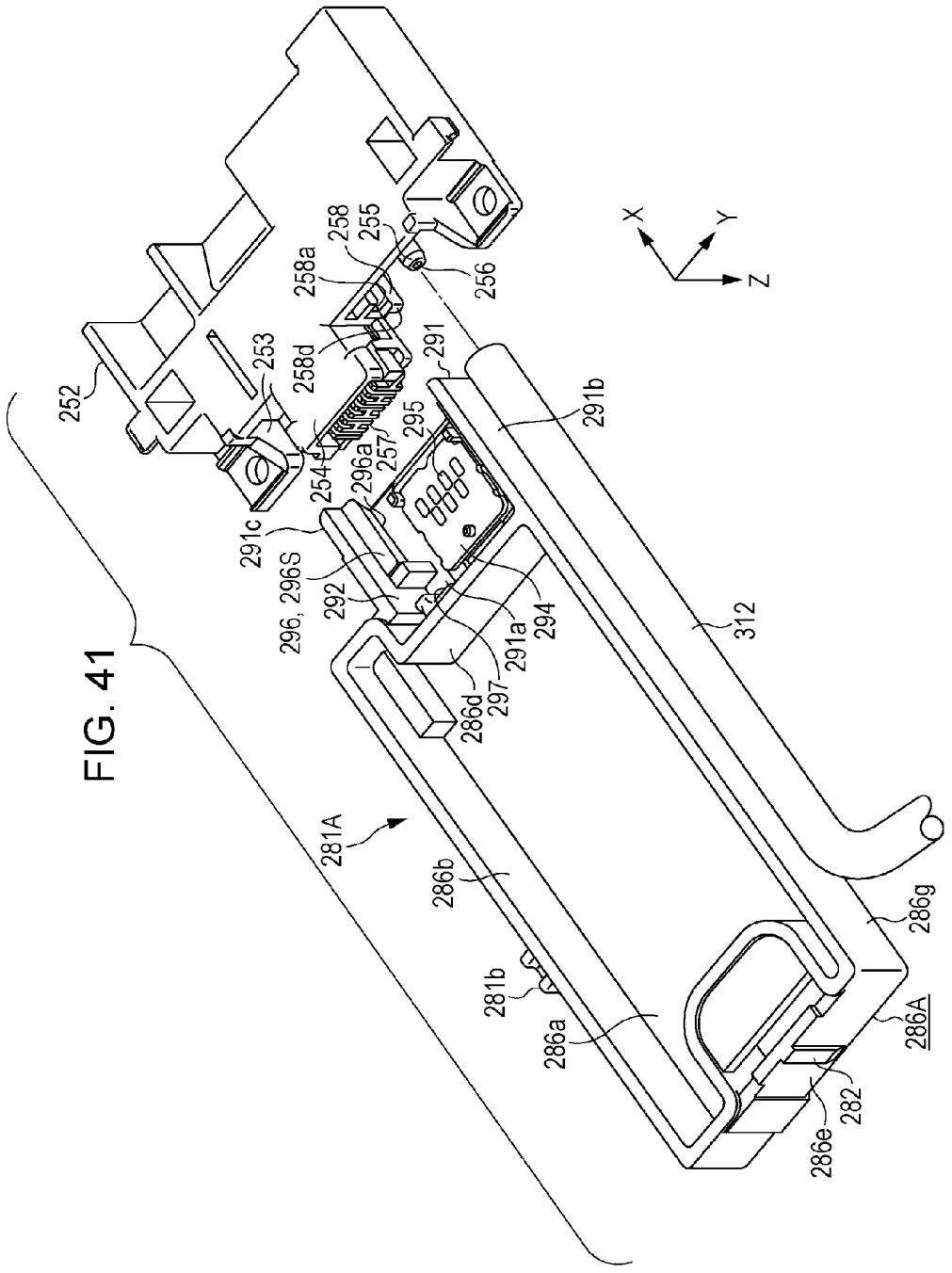
286d
286e
286g

FIG. 40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292
294
291a
312
286d
297
281A
286b
286g
281b
286a
286A
282
286e

FIG. 41

WASTE LIQUID CONTAINER, ATTACHMENT, WASTE LIQUID COLLECTION UNIT, AND LIQUID EJECTING APPARATUS

BACKGROUND

1. Technical Field

The present invention relates to a liquid ejecting apparatus such as an ink jet printer and a waste liquid container, an attachment, and a waste liquid collection unit applied to the liquid ejecting apparatus.

2. Related Art

As an example of a liquid ejecting apparatus, there is an ink jet printer that performs printing by ejecting ink from nozzles formed in a liquid ejecting head. In order to prevent or resolve clogging of the nozzles in such a printer, the ink is discharged as a waste liquid from the nozzles and the discharged waste liquid is contained in a waste liquid container detachably mounted on a mounting mechanism in some cases. A waste liquid container includes a container member that can contain the waste liquid, a circuit substrate that stores various kinds of information regarding a capacity or the like of the waste liquid, a connection terminal of the circuit substrate, and a guide portion that positions an apparatus-side connection terminal at the time of the mounting on the mounting mechanism (for example, see JP-A-2013-216010).

The waste liquid container includes a waste liquid introduction portion which is opened upward. When the waste liquid container is mounted on the mounting mechanism, the waste liquid flowing down from the vertically upper side of the waste liquid container is introduced into the container member via the waste liquid introduction portion. When the waste liquid is introduced via the waste liquid introduction portion opened toward a lateral side, it is possible to obtain the advantage that the height of the waste liquid container can be reduced, compared to the case in which the waste liquid is introduce from the waste liquid introduction portion opened upward.

When a discharge portion of the mounting mechanism is connected to the waste liquid introduction portion with the mounting of the waste liquid container on the mounting mechanism, it is possible to simplify an operation of mounting the waste liquid container on the mounting mechanism. However, in order to connect the discharge portion to the waste liquid introduction portion with the mounting of the waste liquid container, there is a problem that the waste liquid container has to be mounted while the connection terminal of the circuit substrate is positioned to the connection terminal of the apparatus side and the waste liquid introduction portion is also matched with the discharge portion.

This problem is not limited to only the waste liquid container detachably mounted on the printer, but is nearly common to waste liquid containers detachably mounted on mounting units.

SUMMARY

An advantage of some aspects of the invention is that it provides a waste liquid container which can be mounted on a mounting unit while the positions of a waste liquid discharge portion formed in the mounting unit and a substrate connection portion are aligned and a liquid ejecting apparatus on which the waste liquid container is mounted.

Hereinafter, means of the invention and operation effects thereof will be described.

According to an aspect of the invention, there is provided a waste liquid container detachably mounted on a mounting unit which includes a discharge portion discharging a waste liquid and a projection to which a substrate connection portion is joined. The waste liquid container includes: a containing portion that is able to contain the waste liquid; a connection concave portion that is opened in a mounting direction in regard to the mounting unit so that the projection is insertable at a time of mounting on the mounting unit; a circuit substrate that includes connection terminals electrically connected to the substrate connection portion at the time of the mounting on the mounting unit and is joined to the connection concave portion; and a waste liquid introduction portion that is connected to the discharge portion at the time of the mounting on the mounting unit. In the connection concave portion, one pair of guide portions guiding the projection at the time of the mounting on the mounting unit is formed so that the connection terminals are interposed therebetween in a width direction intersecting the mounting direction. Of the pair of guide portions, one guide portion is disposed between the connection terminals and the waste liquid introduction portion in the width direction.

In the configuration, when the waste liquid container is moved in the mounting direction to be mounted on the mounting unit, the projection is inserted into the connection concave portion of the waste liquid container so that the positions of the connection terminals recessed in the connection concave portion can be substantially aligned with the position of the substrate connection portion recessed in the projection. Subsequently, the projection is guided by the pair of guide portions in the connection concave portion, so that the positions of the connection terminals are accurately aligned with the substrate connection portion. One of the pair of guide portions is disposed between the connection terminals and the waste liquid introduction portion in the width direction. Therefore, when the positions of the connection terminals are aligned, the position of the waste liquid introduction portion can be aligned. Accordingly, the waste liquid container can be mounted on the mounting unit while the position of the waste liquid container is aligned with the substrate connection portion and the discharge portion of the waste liquid formed in the mounting unit.

In the waste liquid container, the one guide portion may protrude in a wall portion forming the waste liquid introduction portion and the connection concave portion to project toward an inside of the connection concave portion.

In the configuration, by protruding the one guide portion from the wall portion forming the waste liquid introduction portion and the connection concave portion, the distance between the waste liquid introduction portion and the guide portion is shortened. Thus, the position of the waste liquid introduction portion can be aligned accurately by the guide portions.

In the waste liquid container, the one pair of guide portions may include a guide surface extending in the mounting direction and the width direction. The waste liquid introduction portion may be opened in the mounting direction and an opening center of the waste liquid introduction portion may be located on a plane including the guide surface.

In the configuration, the opening center of the waste liquid introduction portion is located on the plane including the guide surface of the one pair of guide portions. Therefore, the guide surface guides the projection formed in the mounting unit, and thus the position of the waste liquid introduction portion can be aligned in the direction intersecting both of the mounting direction and the width direction.

In the waste liquid container, at least some of the connection terminals may be disposed to face a region between the one guide portion and the other guide portion of the one pair of guide portions.

In the configuration, at least some of the connection terminals are disposed to face the region between the one guide portion and the other guide portion of the one pair of guide portions. Therefore, the positions of the connection terminals can be accurately aligned with the substrate connection portion more than when the region and the connection terminals are distant from each other in the mounting direction.

In the waste liquid container, the substrate connection portion may include a movable contact portion elastically deformable according to a contact pressure. At the time of the mounting on the mounting unit, the one pair of guide portions may engage with the projection by an elastic restoration force of the movable contact portion which is pressed against the connection terminals and is elastically deformed.

In the configuration, when the waste liquid container is mounted on the mounting unit, the guide portions and the projection engage with each other by the elastic restoration force of the movable contact portion pressed by the connection terminals, so that the state in which the movable contact portion comes into contact with the connection terminals by the predetermined contact pressure can be maintained. Thus, for example, even when the waste liquid container is slightly moved due to vibration or the like, the state in which the connection terminals are electrically connected to the substrate connection portion can be maintained.

In the waste liquid container, the connection concave portion and the waste liquid introduction portion may be formed to be arranged in the width direction in a convex portion protruding from the containing portion in the mounting direction. Both ends of the convex portion in the width direction may be disposed in the width direction more inside than both ends of the containing portion in the width direction.

In the configuration, since both ends of the convex portion in the width direction are disposed inside both ends of the containing portion in the width direction, it is possible to suppress unnecessary collision of the connection concave portion and the waste liquid introduction portion to other members or the like more than when the connection concave portion and the waste liquid introduction portion are disposed at the end in the width direction.

The waste liquid container may further include an absorber that is able to absorb the waste liquid; an accommodation member in which an accommodation concave portion capable of accommodating the absorber is formed; a film member that covers an opening of the accommodation concave portion; and a reinforcement member that is disposed between the absorber and the film member. The containing portion may be surrounded by the accommodation concave portion and the film member.

In the configuration, by covering the opening of the accommodation concave portion formed in the accommodation member with the film member, the size of the accommodation concave portion can be reduced in the depth direction more easily than when the opening of the accommodation concave portion is covered with a plate-shaped member. By disposing the reinforcement member between the absorber and the film member, deformation of the absorber is suppressed when the absorber accommodated in the accommodation concave portion is pressed via the film member. Thus, the leakage of the liquid absorbed in the absorber can be suppressed.

In the waste liquid container, the accommodation member may include a protrusion projecting inside the accommodation concave portion. The absorber may include an insertion portion into which the protrusion is insertable.

In the configuration, by inserting the protrusions formed in the accommodation member into the insertion portions formed in the absorber, it is possible to suppress movement of the absorber inside the accommodation concave portion.

In the waste liquid container, the reinforcement member may be disposed between the protrusion and the film member.

In the configuration, by disposing the reinforcement member between the protrusions and the film member, movement of the reinforcement member pressed via the film member can be suppressed by the protrusions. Accordingly, it is possible to suppress occurrence of leakage of the waste liquid absorbed by the absorber when the reinforcement member is moved to press the absorber.

In the waste liquid container, the reinforcement member may be formed of a sheet-shaped resin material.

In the configuration, by forming the reinforcement member in the sheet shape, it is possible to ensure a large space for accommodating the absorber inside the accommodation concave portion. Further, a resin material is easily molded, and thus is suitable to form the reinforcement member in the sheet shape.

According to another aspect of the invention, there is provided a liquid ejecting apparatus including: a liquid ejecting unit that is able to eject a liquid; and a mounting unit on which the foregoing waste liquid container is detachably mounted. The mounting unit includes a discharge portion discharging a waste liquid and a projection to which a substrate connection portion is joined.

In the configuration, the same operational advantages as those of the waste liquid container can be obtained.

According to still another aspect of the invention, there is provided an attachment which is a separate body from a waste liquid containing unit accommodated in an accommodation chamber, in which a mounting unit including a discharge portion discharging a waste liquid to a waste liquid containing unit and a projection to which a substrate connection portion is joined, in a state in which the liquid containing unit is mounted on the mounting unit. The attachment includes: a connection concave portion that is opened in a mounting direction in regard to the mounting unit so that the projection is insertable at a time of mounting on the mounting unit; and a circuit substrate that includes connection terminals electrically connected to the substrate connection portion at the time of the mounting on the mounting unit and is joined to the connection concave portion. In the connection concave portion, one pair of guide portions guiding the projection at the time of the mounting on the mounting unit is formed so that the connection terminals are interposed therebetween in a width direction intersecting the mounting direction.

In the configuration, when the attachment is moved in the mounting direction to be mounted on the mounting unit, the projection is inserted into the connection concave portion of the attachment so that the positions of the connection terminals recessed in the connection concave portion can be substantially aligned with the position of the substrate connection portion provided to the projection. Subsequently, the projection is guided by the pair of guide portions in the connection concave portion, so that the positions of the connection terminals are accurately aligned with the substrate connection portion. Accordingly, the attachment can be mounted on the mounting unit while the position of the attachment is aligned with the substrate connection portion formed in the mounting unit.

On the other hand, since the waste liquid containing unit containing the waste liquid discharged from the discharge

portion is considered as the separate body from the attachment, the volume of the waste liquid containing unit can be increased without an influence on the volume (size) of the accommodation chamber in which the attachment is accommodated. Accordingly, by increasing the size of the waste liquid containing unit and increasing the amount of waste liquid which can be contained in the waste liquid containing unit, it is possible to discharge the more waste liquid from the discharge portion.

The attachment may further include a waste liquid introduction portion that is connected to the discharge portion at the time of the mounting on the mounting unit. Of the pair of guide portions, one guide portion is disposed between the connection terminals and the waste liquid introduction portion in the width direction.

In the configuration, when the attachment is mounted on the mounting unit, the discharge portion of the mounting unit is connected to the waste liquid introduction portion of the attachment. Therefore, the waste liquid can be discharged from the discharge portion to the waste liquid containing unit via the attachment. Here, one of the pair of guide portions is disposed between the connection terminals and the waste liquid introduction portion in the width direction. Therefore, when the positions of the connection terminals are aligned, the position of the waste liquid introduction portion can be aligned.

In the attachment, the one guide portion may protrude in a wall portion forming the waste liquid introduction portion and the connection concave portion to project toward an inside of the connection concave portion.

In the configuration, by protruding the one guide portion on the wall portion forming the waste liquid introduction portion and the connection concave portion, the distances between the waste liquid introduction portion and the guide portions are shortened. Thus, the position of the waste liquid introduction portion can be accurately aligned by the guide portions.

In the attachment, the one pair of guide portions may include a guide surface extending in the mounting direction and the width direction. The waste liquid introduction portion may be opened in the mounting direction and an opening center of the waste liquid introduction portion may be located on a plane including the guide surface.

In the configuration, the opening center of the waste liquid introduction portion is located on the plane including the guide surface of the one pair of guide portions. Therefore, the guide surface guides the projection formed in the mounting unit, and thus the position of the waste liquid introduction portion can be aligned in the direction intersecting both of the mounting direction and the width direction.

In the attachment, at least some of the connection terminals may be disposed to face a region between the one guide portion and the other guide portion of the one pair of guide portions.

In the configuration, at least some of the connection terminals are disposed to face the region between the one guide portion and the other guide portion of the one pair of guide portions. Therefore, the positions of the connection terminals can be accurately aligned with the substrate connection portion more than when the region and the connection terminals are distant from each other in the mounting direction.

According to still another aspect of the invention, there is provided a waste recovery unit including the foregoing attachment; a waste liquid containing unit that is able to contain a waste liquid; and a connection passage that connects the attachment to the waste liquid containing unit.

In the configuration, since the connection passage connects the attachment to the waste liquid containing unit, the degree of freedom of the disposition of the waste liquid containing unit can be improved by dragging the connection passage freely.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described with reference to the accompanying drawings, wherein like numbers reference like elements.

FIG. **1** is a perspective view illustrating a liquid ejecting apparatus according to an embodiment.

FIG. **2** is a perspective view illustrating a state at the time of use of the liquid ejecting apparatus.

FIG. **3** is a sectional view illustrating the inner configuration of the liquid ejecting apparatus.

FIG. **4** is a sectional view illustrating the configuration of a maintenance mechanism included in the liquid ejecting apparatus.

FIG. **5** is a perspective view illustrating a waste liquid container mounted on the liquid ejecting apparatus.

FIG. **6** is a plan view illustrating a cap.

FIG. **7** is a sectional view taken along the line VII-VII of FIG. **6**.

FIG. **8** is an exploded perspective view illustrating the cap.

FIG. **9** is an exploded perspective view illustrating the cap.

FIG. **10** is a sectional view schematically illustrating the vertical liquid ejecting apparatus.

FIG. **11**A is a perspective view illustrating a mounting unit and the waste liquid container and FIG. **11**B is a front view illustrating the mounting unit.

FIG. **12** is an exploded perspective view illustrating the waste liquid container according to the embodiment.

FIG. **13** is a front view illustrating the waste liquid container according to the embodiment.

FIG. **14** is a rear view illustrating the waste liquid container illustrated in FIG. **13**.

FIG. **15** is a plan view illustrating the waste liquid container illustrated in FIG. **13**.

FIG. **16** is a bottom view illustrating the waste liquid container illustrated in FIG. **13**.

FIG. **17** is a right side view illustrating the waste liquid container illustrated in FIG. **13**.

FIG. **18** is a left side view illustrating the waste liquid container illustrated in FIG. **13**.

FIG. **19** is a sectional view taken along the line XIX-XIX of FIG. **13**.

FIG. **20** is a perspective view illustrating the waste liquid container before the mounting.

FIG. **21** is a perspective view illustrating the waste liquid container after the mounting.

FIG. **22** is a schematic view illustrating an operation of the waste liquid container.

FIG. **23** is a front view illustrating a connection concave portion of the waste liquid container.

FIG. **24** is a perspective view illustrating a liquid ejecting apparatus according to a second embodiment.

FIG. **25** is a perspective view illustrating the liquid ejecting apparatus in which an opening/closing body is disposed at an open position.

FIG. **26** is a sectional view illustrating a configuration of the liquid ejecting apparatus relevant to liquid ejection.

FIG. **27** is a sectional view illustrating a configuration of the liquid ejecting apparatus relevant to maintenance.

FIG. **28** is a perspective view illustrating the configuration of the liquid ejecting apparatus on a bottom surface side.

FIG. **29** is a perspective view illustrating a mounting unit and an attachment.

FIG. **30** is a front view illustrating the mounting unit when viewed in a mounting direction.

FIG. **31** is a perspective view illustrating the attachment.

FIG. **32** is a side view illustrating the attachment when viewed in an anti-mounting direction.

FIG. **33** is a perspective view illustrating the mounting unit and the attachment before the mounting.

FIG. **34** is a perspective view illustrating the mounting unit and the attachment after the mounting.

FIG. **35** is a schematic view illustrating a mounting form of the mounting unit and the attachment.

FIG. **36** is a top view illustrating the attachment when viewed from the vertical upper side.

FIG. **37** is a perspective view illustrating a liquid ejecting apparatus according to a third embodiment.

FIG. **38** is a partial bottom view illustrating a casing portion of the liquid ejecting apparatus.

FIG. **39** is a partial top view illustrating the waste liquid container.

FIG. **40** is a perspective view illustrating a mounting form of the attachment according the third embodiment.

FIG. **41** is a perspective view illustrating a mounting form of the attachment according to a modification example.

DESCRIPTION OF EXEMPLARY EMBODIMENTS

First Embodiment

Hereinafter, an embodiment of a liquid ejecting apparatus and a waste liquid container mounted on the liquid ejecting apparatus will be described with reference to the drawings. The liquid ejecting apparatus is, for example, an ink jet printer that performs recording (printing) by ejecting ink which is an example of a liquid to a medium such as a sheet.

As illustrated in FIG. **1**, a liquid ejecting apparatus **11** includes a rectangular box-like casing unit **12** and an opening/closing body **13** mounted on the casing unit **12**. The opening/closing body **13** includes a rectangular plate-shaped body portion **13***a* that is joined to be pivotable with respect to the casing unit **12** and a rectangular plate-shape extension portion **13***b* that is joined such that a base end portion is pivotable with respect to the body portion **13***a*.

The extension portion **13***b* is smaller than the body portion **13***a*. A hand-catch portion **13***c* is recessed on the front end side of the extension portion **13***b*. The opening/closing body **13** is disposed at a close position illustrated in FIG. **1** and an open position illustrated in FIG. **2** by catching the hand-catch portion **13***c* with a hand and pivoting the extension portion **13***b* and the body portion **13***a* at up to predetermined angles, respectively.

When the opening/closing body **13** is disposed at the open position, as illustrated in FIG. **2**, an insertion opening **14** through which a medium S is inserted into the casing unit **12** and a discharge opening **15** through which the medium S is discharged from the casing unit **12** are exposed. The opening/closing body **13** disposed at the open position functions as a support base (sheet feeding tray) supporting the medium S inserted into the insertion opening **14**.

In the casing unit **12**, the outer wall to which the insertion opening **14** is opened is referred to as a top wall **16**, the outer wall opposite to the top wall **16** is referred to as a bottom wall **17**, the outer wall to which the discharge opening **15** is opened is referred to as a front wall **18**, and the outer wall opposite to the front wall **18** is referred to as a rear wall **19**. In the casing unit **12**, pairs of outer walls in which the top wall **16**, the bottom wall **17**, the front wall **18**, and the rear wall **19** intersect each other outside walls **20** (**20**R and **20**L). In the casing unit **12**, the side of the top wall **16** is referred to as a top surface side and the side of the bottom wall **17** is referred to as a bottom surface side in some cases.

A manipulation unit **101** manipulating the liquid ejecting apparatus **11** and a display unit **102** displaying a manipulation result of the manipulation unit **101**, an operation status of the liquid ejecting apparatus **11**, and the like are disposed on the external surface (top wall) side of the top wall **16**. A control unit **103** controlling an operation of the liquid ejecting apparatus **11** is disposed on the internal surface (bottom surface) side of the top wall **16**. The manipulation unit **101** and the display unit **102** are electrically connected to the control unit **103**.

In the opening/closing body **13** disposed at the close position, the body portion **13***a* partially overlaps with a part of the top wall **16** so that the insertion opening **14**, the manipulation unit **101**, and the display unit **102** are covered and the extension portion **13***b* partially overlaps with the front wall **18** so that the discharge opening **15** is covered. Concave portions **16***a* and **18***a* accommodating the body portion **13***a* and the extension portion **13***b* disposed at the close position are recessed in the top wall **16** and the front wall **18**. When the opening/closing body **13** is disposed at the close position, the opening/closing body **13** is accommodated in the concave portions **16***a* and **18***a* so that the outside surface thereof are substantially flush with the outside surface of the casing unit **12** to be integrated with the casing unit **12**.

A posture (a posture illustrated in FIGS. **1** and **2**) at which the bottom wall **17** of the liquid ejecting apparatus **11** is mounted to face a mounted surface is referred to as horizontal placing and a posture (a posture illustrated in FIG. **10**) at which the rear wall **19** is mounted to face the mounted surface is referred to as vertical placing. The area of the outer surface of the rear wall **19** is smaller than the area of the outer surface of the bottom wall **17** in the casing unit **12**. Therefore, when the liquid ejecting apparatus **11** is mounted at the posture of the vertical placing, the area of the mounted surface becomes small. Therefore, the liquid ejecting apparatus **11** can be used such that the liquid ejecting apparatus **11** is horizontally placed at the time of use and is vertically placed at the time of non-use.

When support legs **12***a* (see FIGS. **3**, **5**, and **10**) protrude from the bottom wall **17** and the rear wall **19** which may be contact surfaces to the mounted surface, the posture of the liquid ejecting apparatus **11** can be stabilized at the time of mounting. The liquid ejecting apparatus **11** includes the casing unit **12** of which the posture can be changed at the time of the mounting in this way and the opening/closing body **13** which can be integrated with the casing unit **12**, and thus can be appropriately used as a portable mobile type liquid ejecting apparatus.

As illustrated in FIG. **3**, a transport mechanism **21** that transports the medium S inserted from the insertion opening **14** to the discharge opening **15** and a medium support portion **22** that supports the medium S which is being transported are accommodated in the casing unit **12**.

The transport mechanism **21** includes a transport roller **23** that transports the medium S from the insertion opening **14** to the medium support portion **22** and a discharge roller **24** that transports the medium S from the medium support portion **22** to the discharge opening **15**. The transport mechanism **21** includes a transport motor **25** which is a driving source and a power transmission mechanism **26** which is formed by a gear train or the like transmitting a driving force of the transport motor **25** to the transport roller **23** and the discharge roller **24**.

The liquid ejecting apparatus **11** includes a liquid ejecting unit **31** that ejects a liquid to the medium S supported by the medium support portion **22** and a carriage **33** that holds the liquid ejecting unit **31** and reciprocates along a guide rail **32** installed in the casing unit **12**. The liquid ejecting unit **31** includes a plurality of nozzles **34** ejecting the liquid as liquid droplets.

The liquid ejecting unit **31** ejects the liquid droplets from the nozzles **34** while reciprocating in a movement direction M intersecting a transport direction F of the medium S along with the carriage **33**. For example, the liquid ejected by the liquid ejecting unit **31** is supplied from a liquid container **104** (see FIG. **10**) detachably mounted on the carriage **33**. In the embodiment, an ejection direction J in which the liquid droplets are ejected from the nozzles **34** is a direction intersecting both of the transport direction F and the movement direction M. When the liquid ejecting apparatus **11** is horizontally placed, the ejection direction J is preferably a vertical downside (gravity direction).

In a movement region of the liquid ejecting unit **31**, the side of a first end E**1** (the right end in FIG. **3**) in the movement direction M is set as a home position of the liquid ejecting unit **31**. In the movement region, the liquid ejecting unit **31** alternately performs forward movement oriented from the first end E**1** to a second end E**2** (the left end in FIG. **3**) in the movement direction M and backward movement oriented from the second end E**2** to the first end E**1**. In the embodiment, the transport motor **25** is disposed at a position closer to the insertion opening **14** than the medium support portion **22** in the transport direction F and at a position closer to the second end E**2** than the first end E**1** in the movement direction M.

In the medium support portion **22**, a plurality of support protrusions **22***a* supporting the medium S are installed to be arranged in the movement direction M and the transport direction F. In the medium support portion **22**, a sheet accommodation concave portion **22***b* is installed on the side of the first end E**1** in the movement direction M. A liquid droplet acceptance sheet **27** capable of absorbing the liquid is accommodated in the sheet accommodation concave portion **22***b*.

An absorber **28** capable of absorbing the liquid is disposed between the bottom wall **17** and the sheet accommodation concave portion **22***b* of the medium support portion **22**. The absorber **28** is preferably greater than the liquid droplet acceptance sheet **27** in an absorption capacity of the liquid. In the medium support portion **22**, a plurality of openings are installed at positions corresponding to the inner bottom of the sheet accommodation concave portion **22***b*. In the liquid droplet acceptance sheet **27**, a plurality of extension portions **27***a* of which front ends droop via the openings to come into contact with the absorber **28** are installed.

For example, when non-margin printing is performed up to the margin of the medium S with a small size, such as an L photo sheet or a postcard so that printing is performed without margin, the liquid droplet acceptance sheet **27** accepts the liquid droplets beyond the margin of the medium S. The liquid accepted by the liquid droplet acceptance sheet **27** transitions to the absorber **28** along the extension portions **27***a* to be absorbed by the absorber **28**.

As illustrated in FIG. **4**, the liquid ejecting apparatus **11** includes a maintenance mechanism **41** that performs maintenance of the liquid ejecting unit **31**. In FIG. **4**, to clearly show the configuration of the maintenance mechanism **41**, the transport mechanism **21** and the guide rail **32** are not illustrated and the medium support portion **22**, the carriage **33**, and the liquid ejecting unit **31** are indicated by two-dot chain lines. In FIG. **3**, to clearly show the configuration of the transport mechanism **21**, the maintenance mechanism **41** is not illustrated.

The maintenance mechanism **41** includes a cap **42** that is disposed at a position corresponding to the home position in the movement direction M, a suction mechanism **44** that is connected to the cap **42** via a suction tube **43**, a ventilation tube **45** of which a base end side is connected to the cap **42**, and an atmosphere opening valve **46** that is installed on the front end side of the ventilation tube **45**.

The cap **42** can be moved in the ejection direction J and is moved between a capping position (a position illustrated in FIG. **7**) at which the cap **42** comes into contact with the liquid ejecting unit **31** located at the home position and an evacuation position closer to the bottom wall **17** than the capping position.

When the cap **42** is moved to the capping position at which the cap **42** comes into contact with the liquid ejecting unit **31**, the cap **42** forms an enclosed space to which the nozzles **34** are opened. Thus, forming the enclosed space to which the nozzles **34** are opened by the cap **42** is referred to as "capping." When the cap **42** is moved from the capping position to the evacuation position, the capping is released. Then, the liquid ejecting unit **31** is moved to the home position to wait in the capped state at the time of power-off or the like at which the liquid is not ejected.

When the atmosphere opening valve **46** is displaced to a valve opening position at which the front end of the ventilation tube **45** is opened, the enclosed space formed by the cap **42** enters a state communicating with the atmosphere. When the atmosphere opening valve **46** is displaced to a valve closing position at which the front end of the ventilation tube **45** is closed, a state in which the enclosed space is enclosed is formed so that the nozzles **34** are prevented from drying.

The suction mechanism **44** is, for example, a suction pump that is formed by a tube pump or the like generating a suction force by crushing an elastically deformable tube by a pressing member in an eccentric state while being moved rotatably. When the atmosphere opening valve **46** is located at the valve closing position and the suction mechanism **44** is driven, the enclosed space is depressurized so that a negative pressure is formed. Thus, suction cleaning of discharging the liquid from the liquid ejecting unit **31** via the nozzles **34** is performed. When the suction mechanism **44** is formed by the tube pump, the enclosed space can be allowed to communicate with the atmosphere by releasing the crushing of the rube by the pressing member. Therefore, in this case, the atmosphere opening valve **46** and the ventilation tube **45** may not be included.

The suction cleaning is performed as a maintenance operation to resolve an ejection failure, for example, when the ejection failure of the liquid occurs due to clogging or the like of the nozzles **34**. Therefore, the liquid discharged from the nozzles **34** through the suction cleaning is treated as a waste liquid containing solute components or the like of bubbles mixed inside the liquid ejecting unit **31** or the thickened liquid.

After the suction cleaning is performed, the negative pressure of the enclosed space is released by displacing the atmosphere opening valve **46** to the valve opening position, and then the capping is released by relatively moving the cap **42** in a direction distant from the liquid ejecting unit **31**. Thereafter, idle suction is performed to discharge the liquid remaining in the cap **42** by driving the suction mechanism **44**.

As a maintenance operation performed to resolve an ejection failure, the liquid ejecting unit **31** performs flushing in some cases by ejecting liquid droplets toward the cap **42** located at the evacuation position. After the flushing is per-

formed, idle suction is performed to discharge the liquid accepted by the cap **42** by driving the suction mechanism **44**.

The liquid ejecting apparatus **11** includes a mounting unit **52** connected to the suction mechanism **44** via a discharge tube **51**. The mounting unit **52** is disposed at a position interposed between the medium support portion **22** and the bottom wall **17** in the ejection direction J and a position closer to the second end E**2** (the left end in FIG. **4**) than the absorber **28** in the movement direction M.

A waste liquid container **81** capable of containing a waste liquid is detachably mounted on the mounting unit **52**. The liquid (waste liquid) discharged from the liquid ejecting unit **31** to the cap **42** through the suction cleaning or the flushing is contained in the waste liquid container **81** mounted on the mounting unit **52** via the discharge tube **51** with the driving of the suction mechanism **44**. In the embodiment, the cap **42**, the absorber **28**, the mounting unit **52**, and the waste liquid container **81** mounted on the mounting unit **52** are disposed to be arranged sequentially from the first end E**1** to the second end E**2** in the movement direction M.

The waste liquid container **81** according to the embodiment is moved from the side of the second end E**2** to the side of the first end E**1** to be mounted on the mounting unit **52** in the liquid ejecting apparatus **11**. The waste liquid container **81** mounted on the liquid ejecting apparatus **11** is moved from the side of the first end E**1** to the side of the second end E**2** to be detached (removed) from the mounting unit **52**. Therefore, a direction (an opposite direction to the movement direction M) oriented from the second end E**2** to the first end E**1** is referred to as a mounting direction X of the waste liquid container **81** and a direction (the movement direction M) oriented from the first end E**1** to the second end E**2** is referred to as a detaching direction of the waste liquid container **81** in some cases. In the waste liquid container **81**, one end (the right end in FIG. **4**) which is the front side (the side on which the waste liquid container **81** is mounted on the mounting unit **52**) of the mounting direction X is referred to as a front end and the other end (the left end in FIG. **4**) which is an opposite side to the one end is referred to as a rear end in some case.

A direction intersecting the mounting direction X of the waste liquid container **81** is referred to as a width direction Y and a direction intersecting both of the mounting direction X and the width direction Y is referred to as a thickness direction Z. In the embodiment, the width direction Y is a direction orthogonal to the mounting direction X and is a direction identical to the transport direction F when the waste liquid container **81** is mounted on the mounting unit **52**. In the embodiment, the thickness direction Z is a direction orthogonal to both of the mounting direction X and the width direction Y and is a direction identical to the ejection direction J when the waste liquid container **81** is mounted on the mounting unit **52**.

On the bottom wall **17** of the casing unit **12**, a waste liquid container accommodation portion **48** that can contain the waste liquid container **81** is recessed to be opened in the ejection direction J (the bottom surface side). The length of the waste liquid container accommodation portion **48** in the mounting direction X is longer than the length of the waste liquid container **81** in the mounting direction X.

In the waste liquid container accommodation portion **48**, a movement guide portion **49** guiding the waste liquid container **81** mounted on or detached from the mounting unit **52** is installed to extend in the mounting direction X. Guide protrusions **81***a* and **81***b* engaging with the movement guide portion **49** at the time of the mounting on the mounting unit **52** protrude on both of the end sides of the waste liquid container **81** in the width direction Y.

The positions of the guide protrusions **81***a* and **81***b* are different in the thickness direction Z (see FIGS. **11**A and **11**B). The guide protrusion **81***a* engages with the movement guide portion **49** from the bottom surface side and the guide protrusion **81***b* engages with the movement guide portion **49** from the top surface side. That is, the waste liquid container **81** is mounted on the mounting unit **52**. Therefore, when the waste liquid container **81** is moved in the mounting direction X in the waste liquid container accommodation portion **48**, the guide protrusions **81***a* and **81***b* engage with the movement guide portion **49**, and thus the movement of the waste liquid container **81** in the ejection direction J is suppressed.

On the bottom wall **17** of the casing unit **12**, as illustrated in FIG. **5**, a mounting opening **17***a* through which the waste liquid container **81** is mounted on the mounting unit **52** of the liquid ejecting apparatus **11** is installed to communicate with the waste liquid container accommodation portion **48**. An opening/closing lid **47** including a pair of locking claws **47***a* is joined to the mounting opening **17***a* so that the opening/closing lid **47** is pivoted to be opened or closed.

A locking protrusion **47***b* regulating the movement of the waste liquid container **81** mounted on the mounting unit **52** in the detaching direction protrudes in the opening/closing lid **47**. A movement regulation portion **82** which can engage with the locking protrusion **47***b* protrudes in the rear end portion of the waste liquid container **81**.

When the waste liquid container **81** is accommodated in the waste liquid container accommodation portion **48** from the mounting opening **17***a* and the waste liquid container **81** is subsequently moved toward the mounting unit **52** in the mounting direction X, the waste liquid container **81** is mounted on the mounting unit **52**.

When the waste liquid container **81** is mounted on the mounting unit **52** in this way and the opening/closing lid **47** is subsequently pivoted so that the locking claws **47***a* engage with the mounting opening **17***a*, the locking protrusion **47***b* and the movement regulation portion **82** engage with each other so that the movement of the waste liquid container **81** in the detaching direction is regulated.

A finger-catch portion **83** caught by a finger or the like when the waste liquid container **81** is removed from the mounting unit **52** is recessed in the waste liquid container **81**. When the waste liquid container **81** is removed from the mounting unit **52**, the opening/closing lid **47** is opened to release the engagement of the locking protrusion **47***b* with the movement regulation portion **82** and the waste liquid container **81** is subsequently moved in the detaching direction, for example, by catching the finger-catch portion **83** with a finger. Then, the waste liquid container **81** is taken out from the waste liquid container accommodation portion **48** via the mounting opening **17***a*. The waste liquid container **81** is exchanged by mounting and detaching the waste liquid container **81**, for example, when a capacity of the waste liquid in the waste liquid container **81** exceeds a regulation capacity.

Next, the configuration of the cap **42** will be described in detail.

As illustrated in FIG. **6**, the cap **42** includes a cap member **63** in which a first connection protrusion **61** to which the suction tube **43** is connected protrudes and a second connection protrusion **62** to which the ventilation tube **45** is connected protrudes. In the embodiment, the first connection protrusion **61** and the second connection protrusion **62** are disposed to be arranged in the movement direction M, and the second connection protrusion **62** is disposed at a position closer to the home position than the first connection protrusion **61**.

The cap member **63** includes a bottom portion **64** that extends in the transport direction F and the movement direction M and a side wall portion **65** that intersects the bottom portion **64** and extends in the ejection direction J. The bottom portion **64** of the cap member **63** has a substantially rectangular shape of which a longitudinal direction is the transport direction F and a transverse direction is the movement direction M in a plan view. When a part of the side wall portion **65** on the upstream side in the transport direction F is referred to as a first side wall **65***a*, a part thereof on the downstream side in the transport direction F is referred to as a second side wall **65***b*, a part thereof on a first end side (the right side in FIG. **7**) in the movement direction M is referred to as a third side wall **65***c*, and a part thereof on a second end side (the left side in FIG. **7**) in the movement direction M is referred to as a fourth side wall **65***d*, the side walls **65***c* and **65***d* are longer than the side walls **65***a* and **65***b*. The first connection protrusion **61** and the second connection protrusion **62** protrude in the transport direction F to project from the second side wall **65***b*.

As illustrated in FIG. **7**, the bottom portion **64** and the side wall portion **65** of the cap member **63** form a liquid storage portion **66** that can store a liquid. An elastically deformable lip portion **67** with a circular shape is joined to the front end of the side wall portion **65** of the cap member **63**. When the cap **42** forms the enclosed space, the lip portion **67** is elastically deformed to come into close contact with the liquid ejecting unit **31**, and thus the degree of close contact of the enclosed space increases.

The cap member **63** includes a discharge hole **68** formed to penetrate through the first connection protrusion **61** and the second side wall **65***b*. That is, the discharge hole **68** communicating with the suction tube **43** is formed in the cap member **63**.

As illustrated in FIG. **8**, a ventilation passage formation portion **65***e* protrudes at a position corresponding to the second connection protrusion **62** of the second side wall **65***b* to project to the liquid storage portion **66**. The cap member **63** includes a ventilation hole **69** formed to penetrate through the second connection protrusion **62**, the second side wall **65***b*, and the ventilation passage formation portion **65***e*.

A groove **71** communicating with the discharge hole **68** and extending the longitudinal direction of the bottom portion **64** is recessed in the bottom portion **64** of the cap member **63**. when an end portion of the groove **71** connected to the discharge hole **68** is assumed to be a downstream end, an upstream end of the groove **71** forms a substantially circular shape in a plan view and is located near the middle of the bottom portion **64** in the longitudinal direction (the transport direction F) and the transverse direction (the movement direction M). In the liquid storage portion **66**, the ventilation hole **69** is opened at a position closer to the discharge hole **68** than the upstream end of the substantially circular shape of the groove **71** in a plan view and a position distant from the bottom portion **64**.

In the bottom portion **64** of the cap member **63**, a plurality of support shafts **72** (two support shafts in the embodiment) protrude in the longitudinal direction (the transport direction F). In the embodiment, the upstream end forming the circular shape of the groove **71** in a plan view is disposed between the two support shafts **72** in the longitudinal direction of the bottom portion **64**. The groove **71** is wound to avoid the support shafts **72**.

As illustrated in FIGS. **8** and **9**, a sheet-shaped member **73** with flexibility overlaps with the bottom portion **64** to cover the groove **71** in the liquid storage portion **66** of the cap **42**.

In the sheet-shaped member **73**, as illustrated in FIG. **8**, a suction hole **73***a* is formed at a position at which the suction hole **73***a* overlaps with the upstream end of the groove **71**. In the sheet-shaped member **73**, through holes **73***b* are formed so that the support shafts **72** are inserted inside the liquid storage portion **66**. In the sheet-shaped member **73**, a notch **73***c* is formed at a position corresponding to the ventilation passage formation portion **65***e*.

In the liquid storage portion **66**, liquid absorbers **74** and **75** capable of absorbing a liquid are accommodated to overlap in a layer shape with the sheet-shape member **73** interposed between the bottom portion **64** and the liquid absorbers **74** and **75**. In the liquid absorbers **74** and **75**, through holes **74***b* and **75***b* through which the support shaft **72** can be inserted in the liquid storage portion **66** are formed, respectively. In the liquid absorbers **74** and **75**, notches **74***c* and **75***c* are formed at positions corresponding to the ventilation passage formation portion **65***e*.

In the embodiment, of the liquid absorbers **74** and **75**, the liquid absorber **74** disposed on the side of the sheet-shaped member **73** is formed of a porous material and the liquid absorber **75** disposed on the side of the lip portion **67** is formed of a non-woven fabric. A plurality of holes formed inside the liquid absorber **74** formed of the porous material are continuous holes communicating with each other and preferably have high affinity to the liquid stored in the liquid storage portion **66**.

In the embodiment, the liquid absorber **74** is formed of an elastic body with higher compressive elastic modulus than the liquid absorber **75** and the cap member **63**. In the embodiment, the two kinds of liquid absorbers **74** and **75** formed of different materials are accommodated in the liquid storage portion **66**, but liquid absorbers formed of any one kind of material may be accommodated. Liquid absorbers formed of materials different from the materials exemplified in the embodiment may be adopted.

The cap **42** preferably includes a pressure member **76** pressing the sheet-shaped member **73** via the liquid absorbers **74** and **75**. The pressure member **76** can be formed of, for example, a metal in a netlike shape so that the outside surface of the liquid absorber **75** is broadly exposed while uniformly pressing the outside surface which is a surface on the side of the lip portion **67** of the liquid absorber **75**.

The pressure member **76** includes an insertion hole **76***b* through which the front end of the support shaft **72** can be inserted. The pressure member **76** is fixed to the cap member **63** by crushing the front end of the support shaft **72** inserted into the insertion hole **76***b* and forming the front end in a hemisphere shape, as illustrated in FIG. **7**.

The pressure member **76** is preferably maintained in a state in which the pressure member **76** presses the liquid absorbers **74** and **75** inside the liquid storage portion **66** to compress and deform the liquid absorbers **74** and **75**. In the embodiment, the liquid absorber **74** compressed and deformed more easily (smoothly) than the liquid absorber **75** is compressed and deformed at a higher compression ratio than the liquid absorber **75** through the pressing of the pressure member **76**.

As illustrated in FIG. **10**, "Ha+Lc≥Lb" is preferably satisfied when Ha is a liquid level height of the liquid which can be absorbed by capillary forces of the liquid absorbers **74** and **75**, Lb is the length of the bottom portion **64** in the extension direction (the transport direction F which is the longitudinal direction of the bottom portion **64** in the embodiment) of the discharge hole **68**, and Lc is the distance between the discharge hole **68** and the suction hole **73***a* in the extension direction. When the suction hole **73***a* is disposed to overlap with the upstream end of the groove **71**, the distance Lc

between the discharge hole **68** and the suction hole **73***a* is substantially identical to the length of the groove **71** in the extension direction.

For example, when the density of the liquid absorber **74**, which is a foam body foamed by minutely dispersing a gas of a synthetic resin of urethane, polyvinyl alcohol, or the like, is in the range of 0.023 g/cc to 0.099 g/cc and the diameter of the hole (bubble) is in the range of about 200 micrometers to about 300 micrometers, the ink can be sucked and raised by about 15 mm to 25 mm by the capillary force of the continuous holes communicating with each other.

The liquid absorber **75** formed of a non-woven fabric can suck and raise the ink by approximately 20 mm by the capillary force of a gap between fibers when the density is in the range of 0.065 g/cc to 0.175 g/cc and the gap between fibers is about 70 micrometers. It can be said that the capability to maintain the liquid of the liquid absorber is higher as the value of the liquid level height Ha of the liquid which can be absorbed by the capillary force is larger.

In the embodiment, as the result obtained by adopting a urethane foam of which the density is about 0.023 g/cc and the diameter of the hole is about 300 micrometers as the liquid absorber **74**, the liquid level height Ha of the liquid which can be absorbed by the capillary force by the liquid absorber **74** is about 15 mm. Further, as the result obtained by adopting a non-woven fabric formed of a synthetic fiber of which the density is about 0.175 g/cc and the gap between fibers is about 70 micrometers as the liquid absorber **75**, the liquid level height Ha of the liquid which can be absorbed by the capillary force by the liquid absorber **75** is about 23 mm.

Next, an operation of the cap **42** will be described.

Since the discharge hole **68** is formed to penetrate through the side wall portion **65** in the cap member **63** included in the cap **42**, the first connection protrusion **61** protrudes toward the lateral side (in the longitudinal direction of the cap member **63**) used to connect the suction tube **43**. Therefore, the cap **42** can be reduced in size (thinned) in the ejection direction J further than when the first connection protrusion projects from the bottom portion **64** in the ejection direction J.

By protruding the second connection protrusion **62** forming the ventilation hole **69** toward the second side wall **65***b* in the same direction as that of the first connection protrusion **61**, the cap **42** can be reduced in size further than when the first connection protrusion **61** and the second connection protrusion **62** protrude in different directions.

In the liquid ejecting apparatus **11**, it is preferable to reduce the area of the mounted surface necessary to vertically placing the liquid ejecting apparatus **11**, as illustrated in FIG. **10**. From this viewpoint, the area of the mounted surface necessary to vertically place the liquid ejecting apparatus **11** can be reduced by thinning the cap **42** (reducing the size of the cap **42** in the ejection direction J) and thinning the liquid ejecting apparatus **11**.

In the embodiment, a passage communicating with the discharge hole **68** is formed by the sheet-shaped member **73** and the groove **71** recessed by the bottom portion **64**. Therefore, when the suction mechanism **44** is driven, the inside of the liquid storage portion **66** is sucked via the suction hole **73***a* and the discharge hole **68** formed in the sheet-shaped member **73**.

At this time, by covering the groove **71** with the thin sheet-shaped member **73** to form the passage, the cap **42** and the liquid ejecting apparatus **11** can be thinned further than when the groove **71** is covered with a plate or the like. When the sheet-shaped member **73** covering the groove **71** is thinned, the sheet-shaped member **73** is easily bent at the time of driving of the suction mechanism **44**. Therefore, it is possible to remove the gap between the bottom portion **64** (the bottom surface forming the liquid storage portion **66**) and the sheet-shaped member **73** and sucking the inside of the liquid storage portion **66** effectively.

In particular, in the embodiment, since the liquid absorber **74** with high compressive elastic modulus is disposed to be compressed and deformed at a position at which the liquid absorber **74** comes into contact with the sheet-shaped member **73**, the sheet-shaped member **73** is tightly pressed against the bottom portion **64** by an elastic restoration force of the liquid absorber **74**.

Here, when the suction cleaning is performed in the liquid ejecting apparatus **11**, the liquid discharged from the nozzles **34** and thus the liquid droplets adhered to the liquid ejecting unit **31** remain in some cases. The liquid absorber **75** present on the side of the lip portion **67** has a function of removing the liquid droplets from the liquid ejecting unit **31** by touching and absorbing the liquid droplets adhered to the liquid ejecting unit **31**.

Therefore, when the enclosed space is formed by the cap **42**, it is necessary dispose the liquid absorber **75** at a position close to the liquid ejecting unit **31**. When the liquid absorber **75** absorbs the liquid and expands, there is a concern of a liquid surface (meniscus) formed in the nozzles **34** being disturbed due to touch to the nozzles **34**. Therefore, the liquid absorber **75** located on the side of the lip portion **67** is preferably deformed small by absorption of the liquid or the like.

From this viewpoint, when the liquid absorber **74** with a large elastic deformation ratio is disposed on the side of the sheet-shaped member **73** and the liquid absorber **75** with a small deformation ratio is disposed on the side of the lip portion **67**, the contact of the liquid absorber **75** to the nozzles **34** can be suppressed while the sheet-shaped member **73** is pressed against the bottom portion **64** by the liquid absorber **74**. Even when only the hardly deformable liquid absorber **75** is accommodated in the liquid storage portion **66**, the liquid absorber **75** is pressed by the pressure member **76** so that the sheet-shaped member **73** can be pressed against the bottom portion **64**.

The bottom portion **64** of the cap member **63** is formed in the substantially rectangular shape in a plan view and the discharge hole **68** is installed in the second side wall **65***b* which is the short side. Therefore, when the liquid storage portion **66** is sucked directly from the discharge hole **68**, it is difficult that the suction force to affect the side of the first side wall **65***a*. From this point, in the cap member **63**, the discharge hole **68** is installed in the side wall portion **65**, but the discharge hole **68** communicates with the suction hole **73***a* disposed near the middle of the bottom portion **64** via the groove **71**. Therefore, when the suction mechanism **44** is driven, the liquid absorbed by the liquid absorbers **74** and **75** is sucked from the vicinity of the middle of the bottom portion **64**.

Incidentally, when the liquid ejecting apparatus **11** is vertically placed, as illustrated in FIG. **10**, the second side wall **65***b*, the discharge hole **68**, and the ventilation hole **69** in the cap **42** are disposed vertically upward the liquid storage portion **66**, and the first connection protrusion **61** and the second connection protrusion **62** are at the posture in the vertical direction at which the first connection protrusion **61** and the second connection protrusion **62** project vertically upward from the second side wall **65***b*. When the liquid maintaining force of the liquid absorbers **74** and **75** is small and the cap **42** takes the posture in the vertical direction, it is difficult to suck the liquid located vertically downward more than the suction hole **73***a*.

When the condition of "Ha+Lc≥Lb" is satisfied, that is, "Ha≥Lb−Lc" is satisfied, the liquid present on the side of the

first side wall **65***a* can be sucked and raised up to the suction hole **73***a* by the capillary forces of the liquid absorbers **74** and **75** despite the fact that the liquid ejecting apparatus **11** is placed vertically. That is, the liquid vertically downward than the suction hole **73***a* can be sucked and raised by the capillary forces of the liquid absorbers **74** and **75** and the liquid can be discharged from the liquid storage portion **66** of the cap **42** oriented in the vertical direction through the driving of the suction mechanism **44**.

Even when the mounted surface of the liquid ejecting apparatus **11** is inclined, there is a concern of the posture of the cap **42** being inclined and the discharge hole **68** being located vertically more upward than the suction hole **73***a*. Therefore, even when the liquid ejecting apparatus **11** is not placed vertically, the liquid can be discharged from the inclined cap **42** as long as the condition of "Ha+Lc≥Lb" is satisfied, and thus it is preferable to satisfy this condition.

In the embodiment, the value of Ha of the liquid absorber **74** is smaller than that of the liquid absorber **75** and Ha is set to be 15 mm in that the liquid absorber **74** is disposed at a position which the liquid absorber **74** comes into contact with the sheet-shaped member **73**. When the suction hole **73***a* is disposed in the middle in the longitudinal direction of the bottom portion **64**, Lc is the value which is substantially the same as ½ Lb. Therefore, even when the length Lb in the longitudinal direction of the bottom portion **64** is lengthened up to about 30 mm, the liquid of the liquid storage portion **66** placed in the vertical direction can be sucked by satisfying the condition of "Ha+Lc≥Lb." When the position of the suction hole **73***a* in the longitudinal direction of the bottom portion **64** approaches the first side wall **65***a* more than the middle, condition of "Ha+Lc≥Lb" can be satisfied despite the fact that the length Lb in the longitudinal direction of the bottom portion **64** is longer than 30 mm.

For example, at the time of power-off, the capping is performed in a state in which the liquid retains inside the liquid storage portion **66** in order to prevent the nozzles **34** from drying. Therefore, when the ventilation hole **69** is located on the vertical downside inside the liquid storage portion **66**, there is a concern of the liquid flowing in the ventilation hole **69** to be clogged and the liquid being leaking. From this viewpoint, by opening the ventilation hole **69** to the side of the second side wall **65***b* and the position distant from the bottom portion **64**, the liquid can be prevented from flowing in the ventilation hole **69** at either posture of the vertical placing or the horizontal placing.

Here, when the capping is released in the state in which the liquid ejecting apparatus **11** is vertically placed, there is a concern of the liquid being leaking in the liquid storage portion **66** and the inside of the casing unit **12** being staining. In order to reduce this concern, it is preferable to restrict releasing of the capping when the liquid ejecting apparatus **11** includes a detection unit **77** that detects the posture of the casing unit **12** and the detection unit **77** detects that the posture of the casing unit **12** is vertically placed. Further, it is also preferable to restrict a predetermined operation, such as a liquid ejecting operation (printing, flushing, or the like), a maintenance operation for the nozzles **34**, or exchange of the liquid container **104**, by which the inside of the casing unit **12** stains due to leakage of the liquid.

Further, it is preferable to stop feeding the medium S when the liquid ejecting apparatus **11** includes a medium sensor (not illustrated) detecting that the medium S is inserted into the insertion opening **14**, the medium sensor detects the medium S, and the detection unit **77** detects that the posture of the casing unit **12** is the vertical placing. Thus, it is possible to reduce occurrence of transport failure of the medium S. When the medium sensor detects the medium S and the detection unit **77** detects that the posture of the casing unit **12** is the vertical placing, the medium S may be prevented from being fed by increasing a motor toque of the transport motor **25** which is the driving source.

When an optical detection sensor (for example, the optical sensor "RPI-1035" manufactured by ROHM) is adopted, the detection unit **77** may be disposed at any position inside the casing unit **12**. Of the positions inside the casing unit **12**, the detection unit **77** is preferably disposed at a position on a member to which a vibration source generating proper vibration is joined.

For example, the detection unit **77** according to the embodiment is fixed to the suction mechanism **44** inside the casing unit **12**. At the time of the driving of the suction mechanism **44**, proper vibration is transferred to the detection unit **77**. Therefore, when the detection unit **77** that uses a spindle rolling by the force of gravity is used, a detection failure caused due to adhering after long-term storage can be suppressed according to, for example, a method of driving the suction mechanism **44** before detection and performing the detection.

By adopting a method of not performing detection during the driving of the suction mechanism **44** and performing the detection at a timing at which the driving of the suction mechanism **44** is stopped, it is possible to suppress erroneous detection due to vibration of the vibration source at the time of normal detection. Here, when a vibration frequency of the vibration source is set to be equal to or less than an audio frequency is set to be equal to or less than 20 Hz, noise caused due to the vibration can be reduced. Thus, it is preferable to set the vibration frequency of the vibration source to be equal to or less than the audio frequency.

When the detection unit **77** detects inclination in the longitudinal direction of the cap member **63** and an inclination angle in the longitudinal direction of the cap member **63** with respect to the horizon exceeds a predetermined threshold value (for example, 20 times), it is preferable to restrict the above-described predetermined operation. A threshold value of the inclination angle at which the operation is restricted may be arbitrarily changed according to, for example, the height (the length in the ejection direction J) of the side wall portion **65** and the liquid maintaining forces of the liquid absorbers **74** and **75**.

Further, even when the liquid ejecting operation (the printing, the flushing, or the like) is performed without performing the capping and the inclination angle exceeds a predetermined threshold, it is preferable to stop the liquid ejecting operation and the feeding operation for the medium S or increase the motor torque of the transport motor **25**. In particular, when the liquid ejecting apparatus **11** includes a storage cell and an operation is possible with the power of the storage cell, there is a concern that a manipulation button or the like is pushed erroneously without intention in the middle of carrying of the liquid ejecting apparatus **11**, and thus, for example, the capping is released or the liquid is ejected. Therefore, when the liquid ejecting apparatus **11** includes a storage cell, in particular, it is preferable to restrict an operation due to the detection of the inclined angle.

Next, the configuration of the mounting unit **52** will be described in detail.

As illustrated in FIGS. **11**A and **11**B, a connection concave portion **53** opened in the detaching direction (the opposite direction to the mounting direction X) and the thickness direction Z is recessed in the mounting unit **52**. In the connection concave portion **53**, a projection **54** projecting in the detaching direction and a cylindrical discharge portion **55**

discharging the waste liquid protrude to be arranged in the width direction Y. A connection hole **56** communicating with the discharge tube **51** is formed in the discharge portion **55**.

A substrate connection portion **57** electrically connected to the control unit **103** (see FIG. **2**) is provided to the projection **54**. The substrate connection portion **57** includes a movable contact portion **57***a* which can be elastically displaced by a contact pressure. The movable contact portion **57***a* projects from the projection **54** in the thickness direction Z when an external force is not received, and the movable contact portion **57***a* is elastically displaced in a direction close to the projection **54** when an external force is received.

The projection **54** includes a pair of engaging projection **58** formed to project in the width direction Y. The pair of engaging projections **58** is disposed at positions at which the substrate connection portion **57** is interposed therebetween in the width direction Y. The substrate connection portion **57** projects more than the engaging projections **58** in the detaching direction, and the engaging projections **58** protrude more than the substrate connection portion **57** in the thickness direction Z.

In the engaging projection **58**, as illustrated in FIG. **11**B, an concave portion is recessed which has engaging surfaces **58***a* and **58***c* extending in the mounting direction X and the width direction Y and facing each other, an engaging surface **58***b* extending in the mounting direction X and the thickness direction Z and intersecting the engaging surfaces **58***a* and **58***c*. The engaging surface **58***a* faces in the thickness direction Z and the engaging surface **58***c* faces in the opposite direction to the thickness direction Z. A front end surface **58***d* of the engaging projection **58** intersecting the engaging surfaces **58***a*, **58***b*, and **58***c* extends in the width direction Y and the thickness direction Z. The center of the connection hole **56** is located on a plane (which is an imaginary surface indicated by a one-dot chain line in FIG. **11**B) including the engaging surface **58***c*.

Subsequently, the configuration of the waste liquid container **81** will be described in detail.

FIG. **12** is an exploded perspective view illustrating the waste liquid container **81**. FIGS. **13** to **18** are diagrams illustrating the outer appearance of the waste liquid container **81**.

In the embodiment, when L 1 is the length of the waste liquid container **81** in the mounting direction X, L2 is the length of the waste liquid container **81** in the width direction Y, and L3 is the length (thickness) of the waste liquid container **81** in the thickness direction Z, "L1>L2>L3" is satisfied. That is, the waste liquid container **81** has an externally thin shape of which a longitudinal direction is the mounting direction X and of which a length in the thickness direction Z is short. Therefore, the waste liquid container **81** is properly mounted on the thin liquid ejecting apparatus **11**.

As illustrated in FIG. **12**, the waste liquid container **81** includes an absorber **84** which can absorb the waste liquid, an accommodation member **86** which has a box-like shape with a bottom and in which an accommodation concave portion **85** capable of accommodating the absorber **84**, a film member **87** which covers an opening of the accommodation concave portion **85**, and a reinforcement member **88** which is disposed between the absorber **84** and the sheet-shaped member **73**. The reinforcement member **88** is a member that has higher rigidity than the film member **87**.

The accommodation member **86** includes a bottom wall portion **86***a* which forms an inner bottom surface of the accommodation concave portion **85**, a pair of side wall portions **86***b* and **86***c* which extends in the mounting direction X and the thickness direction Z and intersects the bottom wall portion **86***a*, and a front wall portion **86***d* and a rear wall portion **86***e* which intersect the wall portions **86***a*, **86***b*, and **86***c*. The accommodation concave portion **85** is formed by the wall portions **86***a*, **86***b*, **86***c*, **86***d*, and **86***e* and a containing portion **89** capable of containing the waste liquid is surrounded to be formed by the accommodation concave portion **85** and the film member **87**. An atmosphere communication hole **87***a* communicating the containing portion **89** with the atmosphere is formed in the film member **87**. The number of atmosphere communication holes **87***a* or the position of the atmosphere communication hole **87***a* can be changed arbitrarily.

The accommodation member **86** includes a convex portion **91** projecting from the containing portion **89** in the mounting direction X in one end (front end) thereof in the mounting direction X. Both ends of the convex portion **91** in the width direction Y are disposed more inside in the width direction Y than the side wall portions **86***b* and **86***c* formed at both ends of the containing portion **89** in the width direction Y. A notch **81***c* formed by notching one corner in the width direction Y is formed at the other end (rear end) of the accommodation member **86** in the mounting direction X.

As illustrated in FIG. **5**, when the waste liquid container **81** is mounted on the mounting unit **52** and the opening/closing lid **47** is closed, one pair of locking claws **47***a* formed in the opening/closing lid **47** is received in a gap formed by forming the convex portion **91** and the notch **81***c* in the accommodation member **86**. Further, to correspond to the reception of the locking claws **47***a*, the corner which is a connection portion between the side wall portion **86***c* and the convex portion **91** is notched at the front end of the accommodation member **86**.

As illustrated in FIGS. **12** to **18**, the guide protrusions **81***a* and **81***b* protrude to the side wall portions **86***b* and **86***c* of the accommodation member **86** to project toward the outside in the width direction Y. The guide protrusion **81***b* is disposed at a position closer to the film member **87** than the guide protrusion **81***a* in the thickness direction Z. The guide protrusion **81***a* is disposed at a position closer to the convex portion **91** than the guide protrusion **81***b* in the mounting direction X.

In the convex portion **91**, as illustrated in FIG. **12**, a connection concave portion **92** opened in the opposite direction to the thickness direction Z and the mounting direction X and a waste liquid introduction portion **93** extending in the mounting direction X are formed to be arranged in the width direction Y. The end of the waste liquid introduction portion **93** in the detaching direction communicates with the containing portion **89** and the end of the waste liquid introduction portion **93** in the mounting direction X is opened to the front end surface of the convex portion **91**. The waste liquid introduction portion **93** includes an insertion opening **93***a* opened in the mounting direction X.

The insertion opening **93***a* of the waste liquid introduction portion **93** is covered with a film **94**. A cross-shaped incision **94***a* is formed in the film **94**. A part of the wall surface of the waste liquid introduction portion **93** is formed by the film member **87**.

The convex portion **91** includes a first wall portion **91***a* which is formed to extend from the bottom wall portion **86***a*, a second wall portion **91***b* which intersects the first wall portion **91***a* and forms a part of the wall surface of the waste liquid introduction portion **93**, a third wall portion **91***c* which intersects the first wall portion **91***a* and is disposed at a position confronting the second wall portion **91***b*, and a fourth wall portion **91***d* (see FIG. **20**) which forms a part of the wall surface of the waste liquid introduction portion **93**. The wall portions **91***a*, **91***b*, and **91***c* and the front wall portion **86***d* form the connection concave portion **92**.

In the first wall portion **91***a*, a circuit substrate **100** including connection terminals **95** are joined to be located inside the connection concave portion **92**. The circuit substrate **100** includes a memory element that stores information such as the capacity of waste liquid contained in the containing portion **89**.

Inside the connection concave portion **92**, a pair of guide portions **96** (**96**F and **96**S) are formed so that the connection terminals **95** are interposed therebetween in the width direction Y. Of the pair of guide portions **96**F and **96**S, one guide portion **96**F protrudes to the second wall portion **91***b* to project toward the inside of the connection concave portion **92** and the other guide portion **96**S protrudes to the third wall portion **91***c* to project toward the inside of the connection concave portion **92**. That is, at one end (front end) of the accommodation member **86**, the guide portion **96**F is disposed between the connection terminals **95** and the waste liquid introduction portion **93** in the width direction Y.

As illustrated in FIG. **17**, one pair of guide portions **96** (**96**F and **96**S) each includes a guide surface **96***a* extending in the mounting direction X and the width direction Y. The guide surface **96***a* is oriented in the opposite direction (the thickness direction Z) to the connection terminals **95**. An opening center (the center of the insertion opening **93***a* and the incision **94***a*) of the waste liquid introduction portion **93** is located on a plane (which is an imaginary surface indicated by a one-dot chain line in FIG. **17**) including the two guide surfaces **96***a*.

A pair of regulation protrusions **97** projecting in the mounting direction X more than the front wall portion **86***d* is formed on the inner rear side of the connection concave portion **92** more than the connection terminals **95**. As illustrated in FIG. **12**, the regulation protrusions **97** are located between the guide portions **96** and the front wall portion **86***d* in the mounting direction X.

As illustrated in FIG. **12**, the accommodation member **86** includes a plurality of protrusions **86***f* and **86***g* projecting inside the containing portion **89**. In the embodiment, the protrusions **86***f* formed in a cross shape in a front view protrude from the bottom wall portion **86***a* and the protrusions **86***g* formed in a plate shape protrude from the side wall portions **86***b* and **86***c*. The lengths of the protrusions **86***f* and **86***g* in the thickness direction Z are shorter than those of the side wall portions **86***b* and **86***c* and the ends of the protrusions **86***f* and **86***g* in the thickness direction Z come into contact with the bottom wall portion **86***a*.

The absorber **84** has a plate shape of which a length in the thickness direction Z is slightly shorter than the protrusions **86***f* and **86***g* and has insertion portions **84***a* and **84***b* into which the protrusions **86***f* and **86***g* are inserted. When the absorber **84** is accommodated in the accommodation concave portion **85**, the protrusions **86***f* and **86***g* are inserted into the insertion portions **84***a* and **84***b* so that movement in the mounting direction X and the width direction Y inside the containing portion **89** is suppressed.

A notch **84***c* corresponding to the notch **81***c* and a notch concave portion **84***d* corresponding to the finger-catch portion **83** are formed at the rear end of the absorber **84**. An extension portion **84***e* accommodated at the rear end of the waste liquid introduction portion **93** is formed at the front end of the absorber **84**. The extension portion **84***e* is not disposed near the insertion opening **93***a* of the waste liquid introduction portion **93** and a gap is formed between the insertion opening **93***a* and the extension portion **84***e* inside the waste liquid introduction portion **93**.

The reinforcement member **88** includes a body portion **88***f* which covers the surface of the absorber **84** on the side of the film member **87**, a first locking portion **88***a* which is locked in the front end of the absorber **84**, and a pair of second locking portions **88***b* which is locked in the rear end of the absorber **84**. When the reinforcement member **88** is accommodated in the containing portion **89**, the first locking portion **88***a* engages with the front end of the absorber **84** and the second locking portions **88***b* engage with the rear end of the absorber **84** so that movement in the mounting direction X in the containing portion **89** is suppressed.

The reinforcement member **88** is preferably formed of a sheet-shaped resin material, but may be formed of, for example, a metal material in a plate shape or a netlike shape. When the reinforcement member **88** is formed in the sheet shape or the plate shape formed of the resin material or the metal material, the first locking portion **88***a* and the second locking portions **88***b* can be formed to be integrated with the body portion **88***f* by bending the front end and the rear end of the reinforcement member **88** in the thickness direction Z.

In the rear end of the reinforcement member **88**, a notch **88**C corresponding to the notch **81***c* and a first notch concave portion **88***d* corresponding to the finger-catch portion **83** are formed. In the rear end of the reinforcement member **88**, a second notch concave portion **88***e* is formed at a position corresponding to the inner bottom of the first notch concave portion **88***d*. The second notch concave portion **88***e* is located between the absorber **84** and the atmosphere communication hole **87***a* of the film member **87** and communicates with the atmosphere communication hole **87***a* and the containing portion **89**. Therefore, for example, the reinforcement member **88** is formed in a netlike shape, the second notch concave portion **88***e* may not be formed in the reinforcement member **88**.

As illustrated in FIG. **19**, when the reinforcement member **88** is accommodated in the containing portion **89**, the body portion **88***f* is disposed between the film member **87** and the protrusions **86***f* and **86***g* formed in the accommodation member **86**. Therefore, when the waste liquid container **81** is disposed so that the thickness direction Z is the gravity direction, the reinforcement member **88** is supported by the protrusions **86***f* and **86***g*.

When the reinforcement member **88** is formed of a material with high rigidity and the lengths of the first locking portion **88***a* and the second locking portions **88***b* are longer than that of the absorber **84** in the thickness direction Z, the body portion **88***f* is supported by the first locking portion **88***a* and the second locking portions **88***b*. Therefore, in this case, the protrusions **86***f* and **86***g* may not be formed in the accommodation member **86**.

As illustrated in FIG. **20**, the connection concave portion **92** of the waste liquid container **81** is opened in the mounting direction X and is formed at one end (front end) of the waste liquid container **81** in the mounting direction X to be opened in the mounting direction X and insertable into the projection **54** at the time of the mounting on the mounting unit **52**. On the other hand, the connection concave portion **53** of the mounting unit **52** is opened in the detaching direction to be insertable into the convex portion **91** formed at the one end of the waste liquid container **81**.

FIG. **21** illustrates the waste liquid container **81** mounted on the mounting unit **52**.

Next, operations of the mounting unit **52** and the waste liquid container **81** will be described.

As illustrated in FIG. **20**, when the waste liquid container **81** is moved toward the mounting unit **52** in the mounting direction X in order to mount the waste liquid container **81** on the mounting unit **52**, the convex portion **91** of the waste liquid container **81** is inserted into the connection concave

portion **53** of the mounting unit **52** and the projection **54** is inserted into the connection concave portion **92** of the waste liquid container **81**.

At this time, one pair of guide portions **96** formed inside the connection concave portion **92** guides the projection **54** so that the positions of the connection terminals **95** are aligned with the substrate connection portion **57** and the position of the waste liquid introduction portion **93** is aligned with the discharge portion **55**.

Specifically, as illustrated in FIG. **22**, the guide portions **96** are inserted into the concave portion formed by the engaging surfaces **58***a*, **58***b*, and **58***c* of the engaging projection **58** formed in the projection **54**. The guide portions **96** formed in a convex shape are moved in the mounting direction X along the engaging surfaces **58***a*, **58***b*, and **58***c* formed in a concave shape so that the guide surfaces **96***a* of the guide portions **96** face the engaging surface **58***c*. That is, the guide portions **96** are directly moved in the mounting direction X so that the movement in the opposite direction to the thickness direction Z is suppressed by the engaging surface **58***a*, the movement in the thickness direction Z is suppressed by the engaging surface **58***c*, and the movement in the width direction Y is suppressed by the engaging surface **58***b*.

Here, since one pair of guide portions **96** is formed with the connection terminals **95** therebetween in the width direction Y, the projection **54** is guided by one pair of guide portions **96** so that the positions of the connection terminals **95** can be aligned with the substrate connection portion **57**. The one guide portion **96**F is disposed between the connection terminals **95** and the waste liquid introduction portion **93** in the width direction Y, the projection **54** is guided by the guide portion **96**F so that the position of the waste liquid introduction portion **93** can be aligned with the discharge portion **55**. Thus, the position alignment of the connection terminals **95** to the substrate connection portion **57** and the position alignment of the waste liquid introduction portion **93** to the discharge portion **55** are performed by one pair of guide portions **96**.

Then, when the regulation protrusions **97** of the waste liquid container **81** collide with the front end surface **58***d* of the engaging projection **58**, the movement of the waste liquid container **81** in the mounting direction X is regulated and the mounting of the waste liquid container **81** on the mounting unit **52** is completed. The position of the waste liquid container **81** at this time is referred to as a mounted position.

Thus, the front end surface **58***d* of the engaging projection **58** and the regulation protrusions **97** function as a positioning unit that stops the waste liquid container **81** moved in the mounting direction X at the mounted position. The movement of the waste liquid container **81** in the mounting direction X can also be regulated by causing the projection **54** to collide with the front wall portion **86***d* without forming the regulation protrusions **97**. However, when the regulation protrusions **97** and the engaging projections **58** are formed to decrease a contact area of the waste liquid container **81** and the projection **54**, accuracy of the positioning is improved.

As illustrated in FIG. **23**, it is preferable to dispose the connection terminals **95** so that the connection terminals **95** face a region AR (indicated by a two-dot chain line in FIG. **23**) between the one guide portion **96**F and the other guide portion **96**S of the one pair of guide portions **96**. Thus, the positions of the connection terminals **95** can be accurately aligned with the substrate connection portion **57** more than when the region AR and the connection terminals **95** are distant in the mounting direction X.

As illustrated in FIG. **22**, when the waste liquid container **81** is located at the mounted position, the movable contact portion **57***a* of the substrate connection portion **57** comes into contact with the connection terminals **95** by a predetermined contact pressure to be elastically displaced and the connection terminals **95** are electrically connected to the substrate connection portion **57**. Thus, the circuit substrate **100** is electrically connected to the control unit **103**, and thus information regarding the capacity or the like of the waste liquid can be transmitted between the circuit substrate **100** and the control unit **103**.

When the waste liquid container **81** is located at the mounted position, the guide surface **96***a* of the one pair of guide portions **96** engages with the engaging surface **58***c* formed in the projection **54** by an elastic restoration force of the movable contact portion **57***a* pressed and elastically displaced by the connection terminals **95**. Therefore, the connection terminals **95** are also moved in the direction distant from the substrate connection portion **57** by the elastic restoration force of the movable contact portion **57***a* and the guide surface **96***a* engages with the engaging surface **58***c* so that the movement of the connection terminals **95** is suppressed. As a result, the state in which the connection terminals **95** come into contact with the movable contact portion **57***a* by a predetermined contact pressure is maintained.

Since the connection terminals **95** are disposed in parallel to a plane (which is an imaginary surface indicated by a one-dot chain line in FIG. **22**) including one pair of guide surfaces **96***a* to form a plane, contact pressures with the plurality of movable contact portions **57***a* projecting in the thickness direction become uniform.

The center of the connection hole **56** is located on the plane (which is the imaginary surface indicated by the one-dot chain line in FIG. **22**) including two engaging surfaces **58***c*, and the opening center of the waste liquid introduction portion **93** is located on the plane (which is the imaginary surface indicated by the one-dot chain line in FIG. **22**) including the two guide surfaces **96***a*. Therefore, when the waste liquid container **81** is moved to the mounted position, the engaging surface **58***c* and the guide surface **96***a* facing each other come into contact with each other by the elastic restoration force of the movable contact portion **57***a* so that the center position of the connection hole **56** and the center position of the waste liquid introduction portion **93** are disposed on the same plane. Thus, since the center position of the connection hole **56** matches the center position of the waste liquid introduction portion **93** in the thickness direction Z, the positions of the waste liquid introduction portion **93** and the discharge portion **55** can be aligned more accurately, and then the discharge portion **55** can be inserted into the waste liquid introduction portion **93**.

With the movement of the waste liquid container **81** to the mounted position, the discharge portion **55** is inserted into the waste liquid introduction portion **93** via the incision **94***a* and the insertion opening **93***a* so that the discharge portion **55** and the waste liquid introduction portion **93** are connected to each other. Thus, the waste liquid discharged from the discharge portion **55** can be introduced to the waste liquid container **81**.

In the discharge portion **55**, a gap formed between the insertion opening **93***a* and the extension portion **84***e* is disposed inside the waste liquid introduction portion **93**. The containing portion **89** communicates with the atmosphere via the atmosphere communication hole **87***a*. Therefore, when the waste liquid is introduced into the containing portion **89** via the discharge portion **55**, the air corresponding to the capacity of the introduced waste liquid is discharged out of the containing portion **89** via the atmosphere communication hole **87***a*.

Here, on the wall portion facing the film member **87** of the waste liquid container **81** in the waste liquid container accommodation portion **48**, a concave portion (not illustrated) serving as an air passage may be formed from the position corresponding to the atmosphere communication hole **87***a* formed in the waste liquid container **81** in a direction distant from the circuit substrate **100**. Thus, the waste liquid discharged from the discharge portion **55** is contained smoothly in the containing portion **89**, the waste liquid contained in the containing portion **89** is absorbed by the absorber **84**, and evaporation of the waste liquid contained in the containing portion **89** is accelerated.

When an absorber capable of absorbing the liquid is disposed in the above-described concave portion and the liquid contained in the waste liquid container **81** leaks from the atmosphere communication hole **87***a*, the leaking liquid is absorbed by the absorber so that adhering of the leaking liquid to the circuit substrate **100** can be suppressed.

When the waste liquid introduction portion **93** is distant from the atmosphere communication hole **87***a* in an inflow direction of the waste liquid to the containing portion **89**, the air and the liquid in the containing portion **89** smoothly disperse in the inflow direction due to the fact that the flow of a fluid (the air and the liquid) is directed from the waste liquid introduction portion **93** to the atmosphere communication hole **87***a* is rarely disturbed.

As illustrated in FIG. **4**, when the waste liquid introduction portion **93** is mounted on the mounting unit **52**, the waste liquid is introduced into the waste liquid introduction portion **93** from the side of the absorber **28** which is the side of the first end E**1** of the movement direction M to the second end E**2**. When the waste liquid introduction portion **93** is mounted on the mounting unit **52**, the atmosphere communication hole **87***a* is disposed on the side of the second end E**2** distant from the absorber **28** more than the waste liquid introduction portion **93**. That is, in the embodiment, since the waste liquid introduction portion **93** and the atmosphere communication hole **87***a* are located at the positions distant in the inflow direction (the movement direction M) of the waste liquid, the waste liquid can smoothly disperse in the longitudinal direction (the movement direction M) of the absorber **84**.

Information regarding the amount of waste liquid introduced from the discharge portion **55** to the waste liquid container **81** is transmitted from the control unit **103** to the circuit substrate **100** and is stored in the memory element included in the circuit substrate **100**. When the control unit **103** reads the capacity of waste liquid stored in the memory element included in the circuit substrate **100** at a predetermined timing and the capacity of waste liquid reaches a given value, the control unit **103** displays, for example, the fact that the capacity of waste liquid reaches the given value on the display unit **102** to prompt the user to exchange the waste liquid container **81**.

Here, when the user detaches the waste liquid container **81** containing the waste liquid from the liquid ejecting apparatus **11** and holds a portion of the film member **87** to press the portion of the film member **87**, there is a concern that the absorber **84** is compressed and deformed via the film member **87** and the waste liquid absorbed in the absorber **84** exudes to leak from the waste liquid introduction portion **93**.

From this viewpoint, in the waste liquid container **81** according to the embodiment, the reinforcement member **88** is disposed between the film member **87** and the protrusions **86***f* and **86***g*. Therefore, even when the portion of the film member **87** is pressed, the reinforcement member **88** and the protrusions **86***f* and **86***g* receive the pressing force, so that the compression and the deformation of the absorber **84** is suppressed. Thus, the leakage of the waste liquid from the waste liquid container **81** is suppressed.

In the waste liquid container **81**, the waste liquid introduction portion **93** and the connection terminals **95** are arranged in the width direction Y. Therefore, even when the waste liquid container **81** is disposed or mounted so that the thickness direction Z is the gravity direction and the waste liquid leaks from the waste liquid introduction portion **93**, the leaking waste liquid is rarely adhered to the connection terminals **95**. Therefore, for example, when the waste liquid container **81** is detached from the liquid ejecting apparatus **11** during the use and the waste liquid container **81** during the use is mounted on the liquid ejecting apparatus **11** again, occurrence of a contact failure of the connection terminals **95** and the substrate connection portion **57** caused due to the adhering of the waste liquid to the connection terminals **95** is suppressed.

According to the foregoing embodiment, the following advantages can be obtained.

(1) The passage communication with the discharge hole **68** is formed by the groove **71** recessed in the bottom portion **64** and the sheet-shaped member **73** overlapping with the bottom portion **64**. Therefore, when the suction mechanism **44** is driven, the inside of the liquid storage portion **66** is sucked via the suction hole **73***a* formed in the sheet-shaped member **73**. That is, the suction hole **73***a* of the sheet-shaped member **73** is formed at the position at which the suction hole **73***a* overlaps with a part of the groove **71**. Therefore, even when the discharge hole **68** is formed in the side wall portion **65**, the inside of the liquid storage portion **66** can be sucked from the position overlapping with the suction hole **73***a* of the groove **71** formed in the bottom portion **64**. Accordingly, in the cap member **63** in which the bottom portion **64** and the side wall portion **65** form the liquid storage portion **66**, the liquid inside the liquid storage portion **66** can be effectively discharged from the discharge hole **68** formed in the side wall portion **65**.

(2) When the suction mechanism **44** is driven and the space surrounded by the groove **71** recessed concavely in the bottom portion **64** and the sheet-shaped member **73** is sucked, the sheet-shaped member **73** is bent and displaced to come into close contact with the bottom portion **64**. Thus, the inside of the liquid storage portion **66** can be sucked efficiently via the suction hole **73***a* without the gap between the sheet-shaped member **73** and the bottom portion **64**.

(3) Since the liquid absorbers **74** and **75** absorb the liquid discharged from the liquid ejecting unit **31**, the leakage of the liquid from the liquid storage portion **66** can be suppressed. By accommodating the liquid absorbers **74** and **75** in the liquid storage portion **66** with the sheet-shaped member **73** between bottom portion **64** and the liquid absorbers **74** and **75**, the sheet-shaped member **73** does not come out of the liquid storage portion **66**.

(4) The pressure member **76** can regulate the movement of the liquid absorbers **74** and **75** and the sheet-shaped member **73** and can press the sheet-shape member **73** against the bottom portion **64**. Thus, the inside of the liquid storage portion **66** can be sucked efficiently via the suction hole **73***a* without the gap between the sheet-shaped member **73** and the bottom portion **64**.

(5) Since the pressure member **76** compresses and deforms the liquid absorbers **74** and **75**, the sheet-shaped member **73** can be pressed against the bottom portion **64** by the elastic restoration force of the liquid absorbers **74** and **75**. Thus, the inside of the liquid storage portion **66** can be sucked efficiently via the suction hole **73***a* without the gap between the sheet-shaped member **73** and the bottom portion **64**.

(6) The value (Ha+Lc) obtained by adding the liquid level height Ha of the liquid absorbed and raised by the capillary forces of the liquid absorbers **74** and **75** and the distance Lc between the discharge hole **68** and the suction hole **73***a* is greater than the length Lb of the bottom portion **64** in the extension direction of the discharge hole **68**. Therefore, the posture of the cap member **63** is changed and the discharge hole **68** is disposed vertically more upward than the groove **71**, the liquid of the liquid storage portion **66** can be absorbed and raised up to the discharge hole **68**.

(7) Since the ventilation hole **69** is opened at the position distant from the bottom portion **64** in the liquid storage portion **66**, the inflow of the liquid to the ventilation hole **69** can be suppressed. When the cap member **63** is inclined and the discharge hole **68** is at the posture at which the discharge hole **68** is located vertically more upward than the suction hole **73***a* and thus the ventilation hole **69** is located at the position closer to the discharge hole **68** than the suction hole **73***a*, the inflow of the liquid to the ventilation hole **69** can be suppressed.

(8) When the waste liquid container **81** is moved in the mounting direction X to be mounted on the mounting unit **52**, the projection **54** is inserted into the connection concave portion **92** of the waste liquid container **81** so that the positions of the connection terminals **95** recessed in the connection concave portion **92** can be substantially aligned with the position of the substrate connection portion **57** recessed in the projection **54**. Subsequently, the projection **54** is guided by the pair of guide portions **96** in the connection concave portion **92**, so that the positions of the connection terminals **95** are accurately aligned with the substrate connection portion **57**. One of the pair of guide portions **96** is disposed between the connection terminals **95** and the waste liquid introduction portion **93** in the width direction Y. Therefore, when the positions of the connection terminals **95** are aligned, the position of the waste liquid introduction portion **93** can be aligned. Accordingly, the waste liquid container **81** can be mounted on the mounting unit **52** while the position of the waste liquid container **81** is aligned with the substrate connection portion **57** and the discharge portion **55** of the waste liquid formed in the mounting unit **52**.

(9) By protruding the one guide portion **96**F from the second wall portion **91***b* forming the waste liquid introduction portion **93** and the connection concave portion **92**, the distance between the waste liquid introduction portion **93** and the guide portion **96** is shortened. Thus, the position of the waste liquid introduction portion **93** can be aligned accurately by the guide portions **96**.

(10) The opening center of the waste liquid introduction portion **93** is located on the plane including the guide surface **96***a* of the one pair of guide portions **96**. Therefore, the guide surface **96***a* guides the projection **54** formed in the mounting unit **52**, and thus the position of the waste liquid introduction portion **93** can be aligned in the thickness direction Z intersecting both of the mounting direction X and the width direction Y.

(11) At least some of the connection terminals **95** are disposed to face the region AR between the guide portions **96**F and **96**S. Therefore, the positions of the connection terminals **95** can be accurately aligned with the substrate connection portion **57** more than when the region AR and the connection terminals **95** are distant from each other in the mounting direction X.

(12) When the waste liquid container **81** is mounted on the mounting unit **52**, the guide portions **96** and the projection **54** engage with each other by the elastic restoration force of the movable contact portion **57***a* pressed by the connection terminals **95**, so that the state in which the movable contact portion **57***a* comes into contact with the connection terminals **95** by the predetermined contact pressure can be maintained. Thus, for example, even when the waste liquid container **81** is slightly moved due to vibration or the like, the state in which the connection terminals **95** are electrically connected to the substrate connection portion **57** can be maintained.

(13) Since both ends of the convex portion **91** in the width direction Y are disposed more inside in the width direction Y than both ends of the containing portion **89** in the width direction Y, it is possible to suppress unnecessary collision of the connection concave portion **92** and the waste liquid introduction portion **93** to other members or the like more than when the connection concave portion **92** and the waste liquid introduction portion **93** are disposed at the end in the width direction Y.

(14) By covering the opening of the accommodation concave portion **85** formed in the accommodation member **86** with the film member **87**, the size of the accommodation concave portion **85** can be reduced in the depth direction (the thickness direction Z) more easily than when the opening of the accommodation concave portion **85** is covered with a plate-shaped member. By disposing the reinforcement member **88** between the absorber **84** and the film member **87**, deformation of the absorber **84** is suppressed when the absorber **84** accommodated in the accommodation concave portion **85** is pressed via the film member **87**. Thus, the leakage of the liquid absorbed in the absorber **84** can be suppressed.

(15) By inserting the protrusions **86***f* and **86***g* formed in the accommodation member **86** into the insertion portions **84***a* and **84***b* formed in the absorber **84**, it is possible to suppress movement of the absorber **84** inside the accommodation concave portion **85**.

(16) By disposing the reinforcement member **88** between the protrusions **86***f* and **86***g* and the film member **87**, movement of the reinforcement member **88** pressed via the film member **87** can be suppressed by the protrusions **86***f* and **86***g*. Accordingly, it is possible to suppress occurrence of leakage of the waste liquid absorbed by the absorber **84** when the reinforcement member **88** is moved to press the absorber **84**.

(17) By forming the reinforcement member **88** in the sheet shape, it is possible to ensure a large space for accommodating the absorber **84** inside the accommodation concave portion **85**. Further, a resin material is easily molded, and thus is suitable to form the reinforcement member **88** in the sheet shape.

The foregoing embodiment may be modified as in the following modification examples.

- When the liquid ejecting apparatus **11** does not include the atmosphere opening valve **46** and the ventilation tube **45**, the ventilation hole **69** and the second connection protrusion **62** may not be formed in the cap member **63**.
- When the suction hole **73***a* formed in the sheet-shaped member **73** is located at a position at which the suction hole **73***a* overlaps with the groove **71**, the suction hole **73***a* can be disposed at any position in the cap **42**. For example, the plurality of suction holes **73***a* may be disposed in the longitudinal direction of the groove **71**. The upstream end side of the groove **71** may be branched into a plurality of ends and the suction holes **73***a* may be disposed at positions at which the suction holes **73***a* overlap with the plurality of branched ends.
- In the cap **42**, the sheet-shaped member **73** may not necessarily have the size enough to cover the entire bottom portion **64**. The sheet-shaped member **73** may have a shape and a size enough to cover at least the groove **71**.

In the cap **42**, the sheet-shaped member **73** may be attached to the bottom portion **64**. In this case, the cap **42** may not include the liquid absorbers **74** and **75** and the pressure member **76** and the sheet-shaped member **73** may not have flexibility.

The engaging projection **58** formed in the mounting unit **52** may not include the concave portion, and the engaging projection **58** with a convex shape engages with the guide portion **96** with a convex shape. Alternatively, the guide portion **96** included in the waste liquid container **81** may be formed in a concave shape and the engaging projection **58** with the convex shape may be inserted into the concave guide portion **96**.

The waste liquid container **81** may not include the convex portion **91** or the notch **81***c*.

In the waste liquid container **81**, the film member **87** covering the opening of the accommodation concave portion **85** included in the accommodation member **86** may be substituted with a plate member. When the opening of the accommodation concave portion **85** is covered with the plate member, the waste liquid container **81** may not include the reinforcement member **88**.

In the waste liquid container **81**, the guide portion **96**F may be formed in another wall from the second wall portion **91***b* forming the waste liquid introduction portion **93** and the connection concave portion **92**. One pair of guide portions **96**F and **96**S may be formed to project outside from the convex portion **91** in the width direction Y. For example, the guide portion **96**F may be formed in the fourth wall portion **91***d* forming the waste liquid introduction portion **93** to project outside in the width direction Y in the waste liquid container **81**. In this case, the guide portion **96**S may be formed in the third wall portion **91***c* to project outside in the width direction Y.

In the waste liquid container **81**, one pair of guide portions **96**F and **96**S may be formed in the second wall portion **91***b* and the fourth wall portion **91***d* forming the waste liquid introduction portion **93**, respectively, to project outside in the width direction Y.

In the foregoing embodiment, the structures of the projection **54** and the guide portions **96** used to align the position of the waste liquid container **81** with the mounting unit **52** can also be adopted to position alignment when the liquid container **104** is mounted on the liquid ejecting apparatus **11** (the carriage **33** and the like).

The liquid ejected by the liquid ejecting unit is not limited to ink. For example, a liquid material in which particles of a functional material are dispersed or mixed in a liquid may be used. For example, a liquid material containing a material such as an electrode material or a color material (pixel material) used to manufacture a liquid crystal display, an electroluminescence (EL) display, and a surface light emission display in a disperse or resolved form may be ejected to perform recording.

The medium is not limited to a sheet, but a plastic film, a thin plate, or the like may be used or a fabric used in a textile printing apparatus may be used.

Second Embodiment

Hereinafter, an embodiment of a liquid ejecting apparatus and an attachment mounted on the liquid ejecting apparatus will be described with reference to the drawings. The liquid ejecting apparatus is, for example, an ink jet printer that performs recording (printing) by ejecting ink which is an example of a liquid to a medium such as a sheet.

As illustrated in FIG. **24**, a liquid ejecting apparatus **211** includes a rectangular box-like casing unit **212**, an opening/closing body **213** mounted on the casing unit **212**, and a waste liquid containing unit **310** disposed on a side surface of the casing unit **212**. The opening/closing body **213** includes a rectangular plate-shaped body portion **213***a* that is joined to be pivotable with respect to the casing unit **212** and a rectangular plate-shape extension portion **213***b* that is joined such that a base end portion is pivotable with respect to the body portion **213***a*.

The extension portion **213***b* is smaller than the body portion **213***a*. A hand-catch portion **213***c* is recessed on the front end side of the extension portion **213***b*. The opening/closing body **213** is disposed at a close position illustrated in FIG. **24** and an open position illustrated in FIG. **25** by catching the hand-catch portion **213***c* with a hand and pivoting the extension portion **213***b* and the body portion **213***a* at up to predetermined angles, respectively.

When the opening/closing body **213** is disposed at the open position, as illustrated in FIG. **25**, an insertion opening **214** through which a medium S is inserted into the casing unit **212** and a discharge opening **215** through which the medium S is discharged from the casing unit **212** are exposed. The opening/closing body **213** disposed at the open position functions as a support base (sheet feeding tray) supporting the medium S inserted into the insertion opening **214**.

In the casing unit **212**, the outer wall to which the insertion opening **214** is opened is referred to as a top wall **216**, the outer wall opposite to the top wall **216** is referred to as a bottom wall **217**, the outer wall to which the discharge opening **215** is opened is referred to as a front wall **218**, and the outer wall opposite to the front wall **218** is referred to as a rear wall **219**. In the casing unit **212**, a pair of outer walls intersecting the top wall **216**, the bottom wall **217**, the front wall **218**, and the rear wall **219** is referred to as outside walls **220**. In the casing unit **212**, the side of the top wall **216** is referred to as a top surface side and the side of the bottom wall **217** is referred to as a bottom surface side in some cases.

A manipulation unit **261** manipulating the liquid ejecting apparatus **211** and a display unit **262** displaying a manipulation result of the manipulation unit **261**, an operation status of the liquid ejecting apparatus **211**, and the like are disposed on the external surface (top wall) side of the top wall **216**. A control unit **263** controlling an operation of the liquid ejecting apparatus **211** is disposed on the internal surface (bottom surface) side of the top wall **216**. The manipulation unit **261** and the display unit **262** are electrically connected to the control unit **263**.

In the opening/closing body **213** disposed at the close position, the body portion **213***a* partially overlaps with a part of the top wall **216** so insertion opening **214**, the manipulation unit **261**, and the display unit **262** are covered and the extension portion **213***b* partially overlaps with the front wall **218** so that the discharge opening **215** is covered. Concave portions **216***a* and **218***a* accommodating the body portion **213***a* and the extension portion **213***b* disposed at the close position are recessed in the top wall **216** and the front wall **218**. When the opening/closing body **213** is disposed at the close position, the opening/closing body **213** is accommodated in the concave portions **216***a* and **218***a* so that the outside surface thereof are substantially flush with the outside surface of the casing unit **212** to be integrated with the casing unit **212**.

As illustrated in FIG. **26**, a transport mechanism **221** that transports the medium S inserted from the insertion opening **214** to the discharge opening **215** and a medium support portion **222** that supports the medium S which is being transported are accommodated in the casing unit **212**. In FIG. **26**,

a part of the configuration is not illustrated to facilitate understanding of description of the configuration related to liquid ejection.

The transport mechanism **221** includes a transport roller **223** that transports the medium S from the insertion opening **214** to the medium support portion **222** and a discharge roller **224** that transports the medium S from the medium support portion **222** to the discharge opening **215**. The transport mechanism **221** includes a transport motor **225** which is a driving source and a power transmission mechanism **226** which is formed by a gear train or the like transmitting a driving force of the transport motor **225** to the transport roller **223** and the discharge roller **224**.

The liquid ejecting apparatus **211** includes a liquid ejecting unit **231** that ejects a liquid to the medium S supported by the medium support portion **222** and a carriage **233** that holds the liquid ejecting unit **231** and reciprocates along a guide rail **232** installed in the casing unit **212**. The liquid ejecting unit **231** includes a plurality of nozzles **234** ejecting the liquid as liquid droplets.

The liquid ejecting unit **231** ejects the liquid droplets from the nozzles **234** while reciprocating in a movement direction M intersecting a transport direction F of the medium S along with the carriage **233**. For example, the liquid ejected by the liquid ejecting unit **231** is supplied from a liquid container (not illustrated) (for example, an ink cartridge) detachably mounted on the carriage **233**. In the embodiment, an ejection direction J in which the liquid droplets are ejected from the nozzles **234** is a gravity direction intersecting both of the transport direction F and the movement direction M.

In a movement region of the liquid ejecting unit **231**, the side of a first end E**1** (the right end in FIG. **26**) in the movement direction M is set as a home position of the liquid ejecting unit **231**. In the movement region, the liquid ejecting unit **231** alternately performs forward movement oriented from the first end E**1** to a second end E**2** (the left end in FIG. **26**) in the movement direction M and backward movement oriented from the second end E**2** to the first end E**1**. In the embodiment, the transport motor **225** is disposed at a position closer to the insertion opening **214** than the medium support portion **222** in the transport direction F and at a position closer to the second end E**2** than the first end E**1** in the movement direction M.

In the medium support portion **222**, a plurality of support protrusions **222***a* supporting the medium S are installed to be arranged in the movement direction M and the transport direction F. In the medium support portion **222**, a sheet accommodation concave portion **222***b* is installed on the side of the first end E**1** in the movement direction M. A liquid droplet acceptance sheet **227** capable of absorbing the liquid is accommodated in the sheet accommodation concave portion **222***b*.

An absorber **228** capable of absorbing the liquid is disposed between the bottom wall **217** and the sheet accommodation concave portion **222***b* of the medium support portion **222**. The absorber **228** is preferably greater than the liquid droplet acceptance sheet **227** in an absorption capacity of the liquid. In the medium support portion **222**, a plurality of openings are installed at positions corresponding to the inner bottom of the sheet accommodation concave portion **222***b*. In the liquid droplet acceptance sheet **227**, a plurality of extension portions **227***a* of which front ends droop via the openings to come into contact with the absorber **228** are installed.

For example, when non-margin printing is performed up to the margin of the medium S with a small size, such as an L photo sheet or a postcard so that printing is performed without margin, the liquid droplet acceptance sheet **227** accepts the liquid droplets beyond the margin of the medium S. The liquid accepted by the liquid droplet acceptance sheet **227** transitions to the absorber **228** along the extension portions **227***a* to be absorbed by the absorber **228**.

As illustrated in FIG. **27**, the liquid ejecting apparatus **211** includes a maintenance mechanism **241** that performs maintenance of the liquid ejecting unit **231**. In FIG. **27**, to facilitate description understanding of a configuration related to maintenance, a part of the configuration is not illustrated and the configurations of the medium support portion **222**, the carriage **233**, and the liquid ejecting unit **231** are indicated by two-dot chain lines.

The maintenance mechanism **241** includes a cap **242** that is disposed at a position corresponding to the home position in the movement direction M, a suction mechanism **244** that is connected to the cap **242** via a suction tube **243**, a ventilation tube **245** of which a base end side is connected to the cap **242**, and an atmosphere opening valve **246** that is installed on the front end side of the ventilation tube **245**.

The cap **242** can be moved in the ejection direction J and is moved between a capping position at which the cap **242** comes into contact with the liquid ejecting unit **231** moved to the home position and an evacuation position at which the cap **242** does not come into contact with the liquid ejecting unit **231**.

When the cap **242** is moved to the capping position at which the cap **242** comes into contact with the liquid ejecting unit **231**, the cap **242** forms an enclosed space to which the nozzles **234** are opened. Thus, forming the enclosed space to which the nozzles **234** are opened by the cap **242** is referred to as "capping." When the cap **242** is moved from the capping position to the evacuation position, the capping is released. Then, the liquid ejecting unit **231** is moved to the home position to wait in the capped state at the time of power-off or the like at which the liquid is not ejected.

When the atmosphere opening valve **246** is displaced to a valve opening position at which the front end of the ventilation tube **245** is opened, the enclosed space formed by the cap **242** enters a state communicating with the atmosphere. When the atmosphere opening valve **246** is displaced to a valve closing position at which the front end of the ventilation tube **245** is closed, a state in which the enclosed space is enclosed is formed so that the nozzles **234** are prevented from drying.

The suction mechanism **244** is, for example, a suction pump that is formed by a tube pump or the like generating a suction force by crushing an elastically deformable tube by a pressing member in an eccentric state while being moved rotatably. When the atmosphere opening valve **246** is located at the valve closing position and the suction mechanism **244** is driven, the enclosed space is depressurized so that a negative pressure is formed. Thus, suction cleaning of discharging the liquid from the liquid ejecting unit **231** via the nozzles **234** is performed. When the suction mechanism **244** is formed by the tube pump, the enclosed space can be allowed to communicate with the atmosphere by releasing the crushing of the rube by the pressing member. Therefore, in this case, the atmosphere opening valve **246** and the ventilation tube **245** may not be included.

The suction cleaning is performed as a maintenance operation to resolve an ejection failure, for example, when the ejection failure of the liquid occurs due to clogging or the like of the nozzles **234**. Therefore, the liquid discharged from the nozzles **234** through the suction cleaning is treated as a waste liquid containing solute components or the like of bubbles mixed inside the liquid ejecting unit **231** or the thickened liquid.

After the suction cleaning is performed, the negative pressure of the enclosed space is released by displacing the atmosphere opening valve **246** to the valve opening position, and then the capping is released by relatively moving the cap **242** in a direction distant from the liquid ejecting unit **231**. Thereafter, idle suction is performed to discharge the liquid remaining in the cap **242** by driving the suction mechanism **244**.

As a maintenance operation performed to resolve an ejection failure, the liquid ejecting unit **231** performs flushing in some cases by ejecting liquid droplets toward the cap **242** located at the evacuation position. After the flushing is performed, idle suction is performed to discharge the liquid accepted by the cap **242** by driving the suction mechanism **244**.

The liquid ejecting apparatus **211** includes a mounting unit **252** connected to the suction mechanism **244** via a connection tube **251**. The mounting unit **252** is disposed at a position interposed between the medium support portion **222** and the bottom wall **217** in the ejection direction J and a position closer to the second end E**2** (the left end in FIG. **27**) than the absorber **228** in the movement direction M. An attachment **281** guiding the waste liquid discharged from the mounting unit **252** to the waste liquid containing unit **310** is detachably mounted on the mounting unit **252**.

The attachment **281** according to the embodiment is moved from the side of the second end E**2** to the side of the first end E**1** to be mounted on the mounting unit **252** of the liquid ejecting apparatus **211**. The attachment **281** mounted on the liquid ejecting apparatus **211** is moved from the side of the first end E**1** to the side of the second end E**2** to be removed from the mounting unit **252**. From this viewpoint, a direction (an opposite direction to the movement direction M) oriented from the second end E**2** to the first end E**1** is referred to as a "mounting direction X" of the attachment **281** and a direction (the movement direction M) oriented from the first end E**1** to the second end E**2** is referred to as a "demounting direction" of the attachment **281** in some cases. In the attachment **281**, one end (the right end in FIG. **27**) which is the front side (which is the side on which the attachment **281** is mounted on the mounting unit **252**) of the mounting direction X is referred to as a front end and the other end (the left end in FIG. **27**) which is an opposite side to the one end is referred to as a rear end in some case.

A direction intersecting the mounting direction X of the attachment **281** is referred to as a width direction Y and a direction intersecting both of the mounting direction X and the width direction Y is referred to as a thickness direction Z. In the embodiment, the width direction Y is a direction orthogonal to the mounting direction X and is a direction identical to the transport direction F when the attachment **281** is mounted on the mounting unit **252**. In the embodiment, the thickness direction Z is a direction orthogonal to both of the mounting direction X and the width direction Y and is a direction identical to the ejection direction J when the attachment **281** is mounted on the mounting unit **252**.

As illustrated in FIG. **27**, on the bottom wall **217** of the casing unit **212**, an accommodation chamber **248** is recessed to be opened in the ejection direction J (the bottom surface side). The length of the accommodation chamber **248** is longer than the length of the attachment **281** in the mounting direction X.

In the accommodation chamber **248**, a space is formed to accommodate the mounting unit **252** and the attachment **281** described above. In the accommodation chamber **248**, a movement guide portion **249** guiding the attachment **281** mounted on and detached from the mounting unit **252** is formed to extend in the mounting direction X. On the other hand, guide protrusions **281***a* and **281***b* engaging with the movement guide portion **249** at the time of the mounting on the mounting unit **252** protrude on both of both end sides of the attachment **281** in the width direction Y.

The positions of the guide protrusions **281***a* and **281***b* are different in the thickness direction Z (see FIG. **29**). The guide protrusion **281***a* engages with the movement guide portion **249** from the bottom surface side and the guide protrusion **281***b* engages with the movement guide portion **249** from the top surface side. That is, the attachment **281** is mounted on the mounting unit **252**. Therefore, when the attachment **281** is moved in the mounting direction X in the accommodation chamber **248**, the guide protrusions **281***a* and **281***b* engage with the movement guide portion **249**, and thus the movement of the attachment **281** in the ejection direction J is suppressed.

As illustrated in FIG. **28**, a plurality of support legs **212***a* are formed to project on the bottom wall **217** of the casing unit **212**. Thus, when the liquid ejecting apparatus **211** is mounted on any mounted surface (plane), a gap is formed between the mounted surface and the bottom wall **217** of the casing unit **212**.

As illustrated in FIG. **28**, a mounting opening **217***a* through which the attachment **281** is mounted on the mounting unit **252** of the liquid ejecting apparatus **211** is installed on the bottom wall **217** of the casing unit **212** to communicate with the accommodation chamber **248**. An opening/closing lid **247** including a pair of locking claws **247***a* is joined to the mounting opening **217***a* so that the opening/closing lid **247** is pivoted to be opened or closed.

A locking protrusion **247***b* regulating the movement of the attachment **281** mounted on the mounting unit **252** in the demounting direction protrudes in the opening/closing lid **247**. In the opening/closing lid **247**, a notch **247***c* is formed in a portion in which the locking protrusion **247***b* is formed. Even when the opening/closing lid **247** is closed, the accommodation chamber **248** and the outside of the casing unit **212** communicate by the notch **247***c*. On the other hand, a movement regulation portion **282** which can engage with the locking protrusion **247***b* protrudes at the rear end of the attachment **281**.

When the attachment **281** is accommodated in the accommodation chamber **248** from the mounting opening **217***a* and the attachment **281** is subsequently moved toward the mounting unit **252** in the mounting direction X, the attachment **281** is mounted on the mounting unit **252**. Here, when the attachment **281** is mounted on the mounting unit **252**, the attachment **281** is accommodated in the accommodation chamber **248**.

When the attachment **281** is mounted on the mounting unit **252** in this way and the opening/closing lid **247** is subsequently pivoted so that the locking claws **247***a* engage with the mounting opening **217***a*, the locking protrusion **247***b* and the movement regulation portion **282** engage with each other so that the movement of the attachment **281** in the demounting direction is regulated.

A finger-catch portion **283** caught by a finger or the like when the attachment **281** is removed from the mounting unit **252** is recessed in the attachment **281**. When the attachment **281** is removed from the mounting unit **252**, the opening/closing lid **247** is opened to release the engagement of the locking protrusion **247***b* with the movement regulation portion **282** and the attachment **281** is subsequently moved in the demounting direction, for example, by catching the finger-catch portion **283** with a finger. Then, the attachment **281** is taken out from the accommodation chamber **248** via the mounting opening **217***a*.

Next, the configuration of the mounting unit **252** will be described in detail with reference to FIGS. **29** and **30**.

As illustrated in FIGS. **29** and **30**, a connection concave portion **253** opened in the demounting direction (the opposite direction to the mounting direction X) and the thickness direction Z is recessed in the mounting unit **252**. In the connection concave portion **253**, a projection **254** projecting in the demounting direction and a cylindrical discharge portion **255** discharging the waste liquid protrude to be arranged in the width direction Y. A connection hole **256** communicating with the connection tube **251** is formed in the discharge portion **255**.

A substrate connection portion **257** electrically connected to the control unit **263** (see FIG. **25**) is joined to the projection **254**. The substrate connection portion **257** includes a movable contact portion **257***a* which can be elastically deformed by a contact pressure. The movable contact portion **257***a* projects from the projection **254** in the thickness direction Z when an external force is not received, and the movable contact portion **257***a* is elastically deformed in a direction close to the projection **254** when an external force is received.

The projection **254** includes a pair of engaging projection **258** formed to project in the width direction Y. The pair of engaging projections **258** is disposed at positions at which the substrate connection portion **257** is interposed therebetween in the width direction Y. The substrate connection portion **257** projects more than the engaging projections **258** in the demounting direction, and the engaging projections **258** protrude more than the substrate connection portion **257** in the thickness direction Z.

In the engaging projection **258**, as illustrated in FIG. **30**, an concave portion is recessed which has engaging surfaces **258***a* and **258***c* extending in the mounting direction X and the width direction Y and facing each other, an engaging surface **258***b* extending in the mounting direction X and the thickness direction Z and intersecting the engaging surfaces **258***a* and **258***c*. The engaging surface **258***a* faces in the thickness direction Z and the engaging surface **258***c* faces in the opposite direction to the thickness direction Z. A front end surface **258***d* of the engaging projection **258** intersecting the engaging surfaces **258***a*, **258***b*, and **258***c* extends in the width direction Y and the thickness direction Z. The center of the connection hole **256** is located on a plane (which is an imaginary surface indicated by a one-dot chain line in FIG. **30**) including the engaging surface **258***c*.

The configuration of the attachment **281** will be described in detail with reference to FIGS. **31** and **32**.

In the embodiment, when L 1 is the length of the attachment **281** in the mounting direction X, L2 is the length of the attachment **281** in the width direction Y, and L3 is the length (thickness) of the attachment **281** in the thickness direction Z, "L1>L2>L3" is satisfied. That is, the attachment **281** has an externally thin shape of which a longitudinal direction is the mounting direction X and of which a length in the thickness direction Z is short. Therefore, the attachment **281** is properly mounted on the thin liquid ejecting apparatus **211**.

As illustrated in FIG. **31**, the attachment **281** includes a discharge tube **285** through which the waste liquid discharged from the discharge portion **255** flows up to the waste liquid containing unit **310** and a case member **286** that accommodates the discharge tube **285**.

As illustrated in FIG. **31**, the case member **286** includes a bottom wall portion **286***a* which forms an inner bottom surface extending in a direction intersecting the thickness direction Z, a pair of side wall portions **286***b* and **286***c* which extends in the mounting direction X and the thickness direction Z and intersects the bottom wall portion **286***a*, and a front wall portion **286***d* and a rear wall portion **286***e* which intersect the wall portions **286***a*, **286***b*, and **286***c*. A tube accommodation portion **287** is formed by the wall portions **286***a*, **286***b*, **286***c*, **286***d*, and **286***e*.

The case member **286** includes a convex portion **291** projecting from the tube accommodation portion **287** in the mounting direction X in one end (front end) thereof in the mounting direction X. Both ends of the convex portion **291** in the width direction Y are disposed more inside in the width direction Y than the side wall portions **286***b* and **286***c* formed at both ends of the tube accommodation portion **287** in the width direction Y. An escape notch **281***c* formed by notching one corner in the width direction Y is formed at the other end (rear end) of the case member **286** in the mounting direction X.

As illustrated in FIG. **28**, when the attachment **281** is mounted on the mounting unit **252** and the opening/closing lid **247** is closed, one pair of locking claws **247***a* formed in the opening/closing lid **247** is received in a gap formed by forming the convex portion **291** and the escape notch **281***c* in the case member **286**. Further, to correspond to the reception of the locking claws **247***a*, the corner which is a connection portion between the side wall portion **286***c* and the convex portion **291** is notched at the front end of the case member **286**.

As illustrated in FIG. **31**, an insertion hole **286***f* communicating with the inside and outside of the tube accommodation portion **287** is formed in the rear wall portion **286***e* of the case member **286** to penetrate in the mounting direction X. The discharge tube **285** is inserted into the insertion hole **286***f*.

As illustrated in FIGS. **31** to **32**, the guide protrusions **281***a* and **281***b* protrude to the side wall portions **286***b* and **286***c* of the case member **286** to project toward the outside in the width direction Y. The guide protrusion **281***b* is disposed at a position closer to the opening of the tube accommodation portion **287** than the guide protrusion **281***a* in the thickness direction Z. The guide protrusion **281***a* is disposed at a position closer to the convex portion **291** than the guide protrusion **281***b* in the mounting direction X.

In the convex portion **291**, as illustrated in FIG. **31**, a connection concave portion **292** opened in the opposite direction to the thickness direction Z and the mounting direction X and a waste liquid introduction portion **293** extending in the mounting direction X are formed to be arranged in the width direction Y. The end of the waste liquid introduction portion **293** in the demounting direction communicates with the tube accommodation portion **287** and the end of the waste liquid introduction portion **293** in the mounting direction X is opened to the front end surface of the convex portion **291**. The waste liquid introduction portion **293** includes an insertion opening **293***a* opened in the mounting direction X. The end of the discharge tube **285** is fitted to the insertion opening **293***a* of the waste liquid introduction portion **293**.

The convex portion **291** includes a first wall portion **291***a* which is formed to extend from the bottom wall portion **286***a*, a second wall portion **291***b* which intersects the first wall portion **291***a* and forms a part of the wall surface of the waste liquid introduction portion **293**, a third wall portion **291***c* which intersects the first wall portion **291***a* and is disposed at a position confronting the second wall portion **291***b*, and a fourth wall portion **291***d* (see FIG. **32**) which forms a part of the wall surface of the waste liquid introduction portion **293**. The wall portions **291***a*, **291***b*, and **291***c* and the front wall portion **286***d* form the connection concave portion **292**.

In the first wall portion **291***a*, a circuit substrate **294** including connection terminals **295** is joined to be detachably mounted and to be located inside the connection concave

portion **292**. The circuit substrate **294** includes a memory element that stores information (=information regarding the amount of waste liquid contained in the waste liquid containing unit **310**) regarding the amount of waste liquid discharged from the discharge portion **255**.

Inside the connection concave portion **292**, a pair of guide portions **296** (**296**F and **296**S) are formed so that the connection terminals **295** are interposed therebetween in the width direction Y. Of the pair of guide portions **296**F and **296**S, one guide portion **296**F protrudes to the second wall portion **291***b* to project toward the inside of the connection concave portion **292** and the other guide portion **296**S protrudes to the third wall portion **291***c* to project toward the inside of the connection concave portion **292**. That is, at one end (front end) of the case member **286**, the guide portion **296**F is disposed between the connection terminals **295** and the waste liquid introduction portion **293** in the width direction Y.

As illustrated in FIG. **32**, one pair of guide portions **296** (**296**F and **296**S) each includes a guide surface **296***a* extending in the mounting direction X and the width direction Y. The guide surface **296***a* is oriented in the opposite direction (the thickness direction Z) to the connection terminals **295**. An opening center (the center of the insertion opening **293***a*) of the waste liquid introduction portion **293** is located on a plane (which is an imaginary surface indicated by a one-dot chain line in FIG. **32**) including the two guide surfaces **296***a*.

As illustrated in FIGS. **31** and **32**, a pair of regulation protrusions **297** projecting in the mounting direction X more than the front wall portion **286***d* is formed on the inner rear side of the connection concave portion **292** more than the connection terminals **295**. The regulation protrusions **297** are located between the guide portions **296** and the front wall portion **286***d* in the mounting direction X.

As illustrated in FIG. **33**, the connection concave portion **292** of the attachment **281** is opened in the mounting direction X and is formed at one end (front end) of the attachment **281** in the mounting direction X to be inserted to the projection **254** at the time of the mounting on the mounting unit **252**. On the other hand, the connection concave portion **253** of the mounting unit **252** is opened in the demounting direction to be insertable to the convex portion **291** formed at one end of the attachment **281**.

As illustrated in FIG. **24**, the waste liquid containing unit **310** is formed in a substantially rectangular box-like shape and is formed as a separate body from the attachment **281**. The waste liquid containing unit **310** includes a waste liquid containing chamber **301** that contains the waste liquid therein. In the waste liquid containing unit **310**, as illustrated in FIG. **27**, an insertion opening **302** communicating with the inside and outside of the waste liquid containing chamber **301** is formed on the side surface on the side of the casing unit **212**. The discharge tube **285** extending from the attachment **281** is fitted to the insertion opening **302**. Thus, the waste liquid discharged from the discharge portion **255** of the mounting unit **252** is contained in the waste liquid containing unit **310** via the discharge tube **285** of the attachment **281**. From this viewpoint, in the embodiment, an example of a "waste liquid recovery unit" is configured to include the attachment **281**, the discharge tube **285**, and the waste liquid containing unit **310**.

Here, as illustrated in FIG. **28**, the discharge tube **285** is formed along the bottom surface of the casing unit **212**. The discharge tube **285** is formed at a position corresponding to the notch **247***c* of the opening/closing lid **247**. Thus, even when the discharge tube **285** is disposed at the close position in the opening/closing lid **247**, the connection state of the attachment **281** and the waste liquid containing unit **310** can be maintained.

A leakage suppression member such as a seal member may be formed in the insertion opening **302** so that the waste liquid contained in the waste liquid containing unit **310** does not leak from the insertion opening **302**, or a waste liquid absorber absorbing the waste liquid may be installed inside the waste liquid containing unit **310**.

Next, an operation of the liquid ejecting apparatus **211** will be described focusing on the mounting unit **252** and the attachment **281**.

As illustrated in FIG. **33**, when the attachment **281** is moved toward the mounting unit **252** in the mounting direction X in order to mount the attachment **281** on the mounting unit **252**, the convex portion **291** of the attachment **281** is inserted into the connection concave portion **253** of the mounting unit **252** and the projection **254** is inserted into the connection concave portion **292** of the attachment **281**. As a result, as illustrated in FIG. **34**, the attachment **281** is mounted on the mounting unit **252**.

At this time, as illustrated in FIG. **33**, one pair of guide portions **296** formed inside the connection concave portion **292** guides the projection **254** so that the positions of the connection terminals **295** are aligned with the substrate connection portion **257** and the position of the waste liquid introduction portion **293** (the discharge tube **285**) is aligned with the discharge portion **255**.

Specifically, as illustrated in FIG. **35**, the guide portions **296** are inserted into the concave portion formed by the engaging surfaces **258***a*, **258***b*, and **258***c* of the engaging projection **258** formed in the projection **254**. The guide portions **296** formed in a convex shape are moved in the mounting direction X along the engaging surfaces **258***a*, **258***b*, and **258***c* formed in a concave shape so that the guide surfaces **296***a* of the guide portions **296** face the engaging surface **258***c*. That is, the guide portions **296** are directly moved in the mounting direction X so that the movement in the opposite direction to the thickness direction Z is suppressed by the engaging surface **258***a*, the movement in the thickness direction Z is suppressed by the engaging surface **258***c*, and the movement in the width direction Y is suppressed by the engaging surface **258***b*.

Here, since one pair of guide portions **296** is formed with the connection terminals **295** therebetween in the width direction Y, the projection **254** is guided by one pair of guide portions **296** so that the positions of the connection terminals **295** can be aligned with the substrate connection portion **257**. The one guide portion **296**F is disposed between the connection terminals **295** and the waste liquid introduction portion **293** (the end of the discharge tube **285**) in the width direction Y, the projection **254** is guided by the guide portion **296**F so that the position of the waste liquid introduction portion **293** can be aligned with the discharge portion **255**. Thus, the position alignment of the connection terminals **295** to the substrate connection portion **257** and the position alignment of the waste liquid introduction portion **293** (the end of the discharge tube **285**) to the discharge portion **255** are performed by one pair of guide portions **296**.

Then, when the regulation protrusions **297** of the attachment **281** collide with the front end surface **258***d* of the engaging projection **258**, the movement of the attachment **281** in the mounting direction X is regulated and the mounting of the attachment **281** on the mounting unit **252** is completed. The position of the attachment **281** at this time is referred to as a "mounted position."

Thus, the front end surface **258***d* of the engaging projection **258** and the regulation protrusions **297** function as a positioning unit that stops the attachment **281** moved in the mounting direction X at the mounted position. The movement of the attachment **281** in the mounting direction X can also be regulated by causing the projection **254** to collide with the front wall portion **286***d* without forming the regulation protrusions **297**. However, when the regulation protrusions **297** and the engaging projections **258** are formed to decrease a contact area of the attachment **281** and the projection **254**, accuracy of the positioning is improved.

As illustrated in FIG. **36**, it is preferable to dispose the connection terminals **295** so that the connection terminals **295** face a region AR (indicated by a two-dot chain line in FIG. **36**) between the one guide portion **296**F and the other guide portion **296**S of the one pair of guide portions **296**. Thus, the positions of the connection terminals **295** can be accurately aligned with the substrate connection portion **257** more than when the region AR and the connection terminals **295** are distant in the mounting direction X.

As illustrated in FIG. **35**, when the attachment **281** is located at the mounted position, the movable contact portion **257***a* of the substrate connection portion **257** comes into contact with the connection terminals **295** by a predetermined contact pressure to be elastically displaced and the connection terminals **295** are electrically connected to the substrate connection portion **257**. Thus, the circuit substrate **294** is electrically connected to the control unit **263**, and thus information regarding the amount of waste liquid contained in the waste liquid containing unit **310** can be transmitted between the circuit substrate **294** and the control unit **263**.

When the attachment **281** is located at the mounted position, the guide surface **296***a* of the one pair of guide portions **296** engages with the engaging surface **258***c* formed in the projection **254** by an elastic restoration force of the movable contact portion **257***a* pressed and elastically displaced by the connection terminals **295**. Therefore, the connection terminals **295** are also moved in the direction distant from the substrate connection portion **257** by the elastic restoration force of the movable contact portion **257***a* and the guide surface **296***a* engages with the engaging surface **258***c* so that the movement of the connection terminals **295** is suppressed. As a result, the state in which the connection terminals **295** come into contact with the movable contact portion **257***a* by a predetermined contact pressure is maintained.

Since the connection terminals **295** are disposed in parallel to a plane (which is an imaginary surface indicated by a one-dot chain line in FIG. **35**) including one pair of guide surfaces **296***a* to form a plane, contact pressures with the plurality of movable contact portions **257***a* projecting in the thickness direction become uniform.

The center of the connection hole **256** of the discharge portion **255** is located on the plane (which is the imaginary surface indicated by the one-dot chain line in FIG. **35**) including two engaging surfaces **258***c*, and the opening center of the waste liquid introduction portion **293** is located on the plane (which is the imaginary surface indicated by the one-dot chain line in FIG. **35**) including the two guide surfaces **296***a*. Therefore, when the attachment **281** is moved to the mounted position, the engaging surface **258***c* and the guide surface **296***a* facing each other come into contact with each other by the elastic restoration force of the movable contact portion **257***a* so that the center position of the connection hole **256** and the center position of the waste liquid introduction portion **293** are disposed on the same plane. Thus, since the center position of the connection hole **256** matches the center position of the waste liquid introduction portion **293** in the thickness direction Z, the positions of the waste liquid introduction portion **293** and the discharge portion **255** can be aligned more accurately, and then the discharge portion **255** can be inserted into the waste liquid introduction portion **293** (the end of the discharge tube **285**).

With the movement of the attachment **281** to the mounted position, the discharge portion **255** is inserted into the end of the discharge tube **285** via the insertion opening **293***a* so that the discharge portion **255** and the waste liquid containing unit **310** are connected via the attachment **281**. Thus, the waste liquid discharged from the discharge portion **255** can be introduced to the waste liquid containing unit **310**.

Here, the information regarding the waste liquid discharged from the discharge portion **255** to the attachment **281** is transmitted from the control unit **263** to the circuit substrate **294** to be stored in the memory element included in the circuit substrate **294** whenever maintenance such as suction cleaning is performed. On the other hand, when the control unit **263** reads the information regarding the amount of waste liquid stored in the memory element of the circuit substrate **294** at a predetermined timing and determines that the amount of waste liquid contained in the waste liquid containing unit **310** reaches a given value, the control unit **263** displays, for example, the fact that the amount of waste liquid reaches the given value on the display unit **262** to prompt the user to exchange the waste liquid containing unit **310**. Here, the given value refers to, for example, the maximum amount of waste liquid which can be contained by the waste liquid containing unit **310**.

As illustrated in FIG. **36**, in the attachment **281**, the waste liquid introduction portion **293** and the connection terminals **295** are arranged in the width direction Y. Therefore, even when the attachment **281** is mounted so that the thickness direction Z is the gravity direction and the waste liquid leaks from the waste liquid introduction portion **293**, the leaking waste liquid is rarely adhered to the connection terminals **295**. Therefore, for example, when the attachment **281** is detached from the liquid ejecting apparatus **211** and the attachment **281** is mounted on the liquid ejecting apparatus **211** again, occurrence of a contact failure of the connection terminals **295** and the substrate connection portion **257** caused due to the adhering of the waste liquid to the connection terminals **295** is suppressed.

By connecting the connection terminals **295** to the substrate connection portion **257**, the waste liquid is allowed to be discharged from the discharge portion **255** by the control unit **263** and maintenance can be performed to discharge the waste liquid to the cap **242**. When the waste liquid is discharged from the liquid ejecting unit **231** to the cap **242** through suction cleaning or flushing, the waste liquid is discharged to the waste liquid containing unit **310** via the connection tube **251**, the discharge portion **255**, and the discharge tube **285** with the driving of the suction mechanism **244**. Thus, in the embodiment, by mounting the attachment **281** including the discharge tube **285** on the mounting unit **252**, it is possible to contain the waste liquid discharged from the discharge portion **255** to the large-sized waste liquid containing unit **310** installed as the separate body from the casing unit **212** and the attachment **281**.

According to the foregoing embodiment, the following advantages can be obtained.

(1) When the attachment **281** is moved in the mounting direction X to be mounted on the mounting unit **252**, the projection **254** is inserted into the connection concave portion **292** of the attachment **281** so that the positions of the connection terminals **295** recessed in the connection concave portion **292** can be substantially aligned with the position of the

substrate connection portion **257** recessed in the projection **254**. Subsequently, the projection **254** is guided by the pair of guide portions **296** in the connection concave portion **292**, so that the positions of the connection terminals **295** are accurately aligned with the substrate connection portion **257**. Accordingly, the attachment **281** can be mounted on the mounting unit **252** while the position of the attachment **281** is aligned with the substrate connection portion **257** and the discharge portion **255** of the waste liquid formed in the mounting unit **252**.

When the attachment **281** is mounted on the mounting unit **252**, the connection terminals **295** are accurately connected to the substrate connection portion **257**, so that the waste liquid is allowed to be discharge from the discharge portion **255**. As a result, the waste liquid discharged from the discharge portion **255** is discharged to the waste liquid containing unit **310** which is the separate body from the casing unit **212**. Accordingly, the more waste liquid can be discharged from the discharge portion **255** to the waste liquid containing unit **310** of which the size is increased by forming the waste liquid containing unit **310** as the separate body from the attachment **281**.

(2) One of the pair of guide portions **296** is disposed between the connection terminals **295** and the waste liquid introduction portion **293** in the width direction Y. Therefore, when the positions of the connection terminals **295** are aligned, the position of the waste liquid introduction portion **293** can be aligned.

(3) By protruding the one guide portion **296**F on the second wall portion **291***b* forming the waste liquid introduction portion **293** and the connection concave portion **292**, the distances between the waste liquid introduction portion **293** and the guide portions **296** are shortened. Thus, the position of the waste liquid introduction portion **293** can be accurately aligned by the guide portions **296**.

(4) The opening center of the waste liquid introduction portion **293** is located on the plane including the guide surface **296***a* of the one pair of guide portions **296**. Therefore, the guide surface **296***a* guides the projection **254** formed in the mounting unit **252**, and thus the position of the waste liquid introduction portion **293** can be aligned in the thickness direction Z intersecting both of the mounting direction X and the width direction Y.

(5) At least some of the connection terminals **295** are disposed to face the region AR between the guide portions **296**F and **296**S. Therefore, the positions of the connection terminals **295** can be accurately aligned with the substrate connection portion **257** more than when the region AR and the connection terminals **295** are distant from each other in the mounting direction X.

(6) When the attachment **281** is mounted on the mounting unit **252**, the guide portions **296** and the projection **254** engage with each other by the elastic restoration force of the movable contact portion **257***a* pressed by the connection terminals **295**, so that the state in which the movable contact portion **257***a* comes into contact with the connection terminals **295** by the predetermined contact pressure can be maintained. Thus, for example, even when the attachment **281** is slightly moved due to vibration or the like, the state in which the connection terminals **295** are electrically connected to the substrate connection portion **257** can be maintained.

(7) Since the discharge tube **285** connects the attachment **281** to the waste liquid containing unit **310**, the degree of freedom of the disposition of the waste liquid containing unit **310** with respect to the liquid ejecting apparatus **211** can be improved by dragging the discharge tube **285** freely.

Third Embodiment

Hereinafter, a third embodiment of the liquid ejecting apparatus will be described. The liquid ejecting apparatus according to the third embodiment is different from the liquid ejecting apparatus according to the second embodiment mainly in the shape of an attachment and disposition of a waste liquid containing unit. Accordingly, in the following description, the same reference numerals are given to configurations of members common to the members in the second embodiment and the description thereof will be simplified and omitted.

As illustrated in FIG. **37**, a liquid ejecting apparatus **211**A according to the third embodiment includes a casing unit **212** and a waste liquid containing unit **311** installed vertically more downward than the casing unit **212** (in the ejection direction J). That is, in the third embodiment, the liquid ejecting apparatus **211**A is configured so that the casing unit **212** is mounted vertically more upward than the waste liquid containing unit **311**.

As illustrated in FIG. **38**, the mounting opening **217***a* is opened in the bottom surface of the casing unit **212**. That is, since the opening/closing lid **247** closing the mounting opening **217***a* is not formed on the bottom wall **217** of the casing unit **212**, a partial configuration of the mounting unit **252** or an attachment **281**A mounted on the mounting unit **252** is exposed.

As illustrated in FIGS. **37** and **39**, the waste liquid containing unit **311** has a substantially rectangular box-like shape of which a length dimension in the movement direction M and the transport direction F is substantially the same as the casing unit **212**. As illustrated in FIG. **39**, the waste liquid containing unit **311** includes a waste liquid containing chamber **303** which can contain the waste liquid. In a top surface portion **304** of the waste liquid containing unit **311** mutually facing the bottom wall **217** of the casing unit **212**, an opening **304***a* greater than the mounting opening **217***a* is formed at a position corresponding to the mounting opening **217***a*. Thus, the waste liquid containing chamber **303** communicates with the outside via the opening **304***a*. In FIG. **39**, in order to show a disposition relation between the mounting opening **217***a* and the discharge portion **255** when the casing unit **212** is mounted on the top surface portion **304** of the waste liquid containing unit **311**, such a member configuration is indicated by a two-dot chain line.

As illustrated in FIG. **40**, the attachment **281**A according to the third embodiment includes a case member **286**A which may not accommodate the discharge tube **285** of the second embodiment. The case member **286**A includes a bottom wall portion **286***a* which forms an inner bottom surface extending in the direction intersecting the thickness direction Z, a pair of side wall portions **286***b* and **286***g* which extend in the mounting direction X and the thickness direction Z and intersects the bottom wall portion **286***a*, and a front wall portion **286***d* and a rear wall portion **286***e* which intersect the wall portions **286***a*, **286***b*, and **286***g*.

Here, the side wall portion **286***g* of the case member **286**A is integrated with the second wall portion **291***b* forming the connection concave portion **292**. Therefore, the case member **286**A according to the third embodiment may not accommodate a discharge tube. That is, even when the attachment **281**A is mounted on the mounting unit **252**, as illustrated in FIG. **38**, the discharge portion **255** is exposed.

Next, an operation of the liquid ejecting apparatus **211**A related to the mounting unit **252** and the attachment **281**A will be described.

As illustrated in FIG. **40**, when the attachment **281**A is moved toward the mounting unit **252** in the mounting direction X in order to mount the attachment **281**A on the mounting unit **252**, the convex portion **291** of the attachment **281**A is inserted into the connection concave portion **253** of the

mounting unit **252** and the projection **254** is inserted into the connection concave portion **292** of the attachment **281**A. At this time, as illustrated in FIG. **40**, one pair of guide portions **296** formed inside the connection concave portion **292** guides the projection **254** so that the positions of the connection terminals **295** are aligned with the substrate connection portion **257**.

By connecting the connection terminals **295** to the substrate connection portion **257**, the waste liquid is allowed to be discharged from the discharge portion **255** by the control unit **263** and maintenance can be performed to discharge the waste liquid to the cap **242**. When the waste liquid is discharged from the liquid ejecting unit **231** to the cap **242** through suction cleaning or flushing, the waste liquid is discharged from the discharge portion **255** via the connection tube **251** with the driving of the suction mechanism **244**.

Here, in the third embodiment, as illustrated in FIG. **39**, the opening **304***a* of the waste liquid containing unit **311** is opened vertically more downward than the discharge portion **255**. Therefore, the waste liquid discharged from the discharge portion **255** drops (flows downward) to the waste liquid containing unit **311** via the opening **304***a* to be contained in the waste liquid containing chamber **303**. Thus, in the embodiment, by mounting the attachment **281**A on the mounting unit **252**, the waste liquid can be contained in the large-sized waste liquid containing unit **311** installed as the separate body from the casing unit **212** (the mounting unit **252**). From this viewpoint, in the third embodiment, an example of a "waste liquid recovery unit" is configured to include the attachment **281**A and the waste liquid containing unit **311**.

According to the third embodiment, the following advantage can be obtained in addition to the advantages (1), (5), and (6) of the second embodiment.

(8) The attachment **281**A and the waste liquid containing unit **311** is installed as the separate bodies without physical connection. Therefore, when the waste liquid may not be contained in the waste liquid containing unit **311**, only the waste liquid containing unit **311** may be exchanged. Therefore, since it is not necessary to detach the attachment **281**A from the mounting unit **252**, it is possible to further reduce the labor related to the exchange of the waste liquid containing unit **311**.

The foregoing embodiment may be modified as in the following modification examples.

As illustrated in FIG. **41**, the attachment **281**A and the discharge tube **312** may be separately mounted on the mounting unit **252**. In this case, the discharge tube **312** preferably connects the discharge portion **255** to the waste liquid containing unit **310** or **311**.

The waste liquid containing unit **310** or **311** may be a container of an open system or may be a container of a close system. The waste liquid containing unit **310** or **311** may be a container with a bag shape or may be a container with a dish shape.

The waste liquid containing unit **310** or **311** may be configured to be fixed to be unmovable to the casing unit **212**. For example, the waste liquid containing unit **310** or **311** may be fixed to the outside walls **220** of the casing unit **212** by fastening members such as bolts.

The liquid ejecting apparatus **211** may be a liquid ejecting apparatus on which a waste liquid containing cartridge capable of containing the waste liquid is detachably mounted on the mounting unit **252**. A liquid waste containing cartridge mounted on the liquid ejecting apparatus **211** may be substituted with and the attachment **281** or **281**A may be mounted. Thus, even in the liquid ejecting apparatus in which the waste liquid is discharge to the waste liquid containing cartridge, the waste liquid can be discharged to the waste liquid containing unit **310** or **311** via the attachment **281** or **281**A. That is, even in the liquid ejecting apparatus, the more waste liquid can be discharged from the discharge portion **255**.

In this case, as the circuit substrates **294** joined to the connection concave portions **292** of the attachments **281** and **281**A, circuit substrates joined to the waste liquid containing cartridges may be used or other circuit substrates may be used.

Here, since the same circuit substrates as the circuit substrates joined to the waste liquid containing cartridges are joined to the attachments **281** and **281**A to be used, the control unit of the liquid ejecting apparatus may erroneously recognize that the waste liquid containing cartridges are mounted on the mounting units **252** despite the fact that the attachments **281** and **281**A are mounted on the mounting units **252**.

Then, in this case, even when the waste liquid containing unit **310** or **311** connected to the attachment **281** or **281**A can further contain the amount of waste liquid, the user is assumed to be prompted to exchange the waste liquid containing cartridge. Accordingly, in this case, the attachment **281** or **281**A may be detached from the mounting unit **252**, the circuit substrate joined to the attachment **281** or **281**A may be exchanged with circuit substrate on which the information regarding the amount of waste liquid is not written, and the attachment **281** or **281**A may be mounted on the mounting unit **252** again. Alternatively, when the attachment **281** or **281**A is detached or attached, the information regarding the amount of waste liquid written on the memory element of the circuit substrate joined to the attachment **281** or **281**A may be rewritten.

Thus, it is necessary to detach or attach the attachments **281** and **281**A periodically. However, since it is not necessary to exchange the waste liquid containing unit **310** or **311** at the time of the detaching or mounting, it is possible to reduce the labor until restoration to the state in which the waste liquid can be discharged again, compared to the case in which the waste liquid containing cartridge containing the waste liquid is attached or detached.

In the second embodiment, the dragging form of the discharge tube **285** at the time of connection from the attachment **281** to the waste liquid containing unit **310** may be changed freely. For example, the discharge tube **285** may be dragged so that the attachment **281** is connected to the waste liquid containing unit **310** from the lower portion of the waste liquid containing unit **310** or the discharge tube **285** may be dragged so that the attachment **281** is connected to the waste liquid containing unit **310** from the upper portion of the waste liquid containing unit **310**. By forming a hole or a notch in the casing unit **212**, the discharge tube **285** may be inserted through the outside wall **220** of the casing unit **212** to be connected to the waste liquid containing unit **310**.

In the third embodiment, a joint formed in a substantial L shape may be mounted on the discharge portion **255** so that the downstream end faces the waste liquid containing unit **311** without scattering of the waste liquid discharged from the discharge portion **255** in the demounting direction. In this case, the opening area of the opening **304***a* of the waste liquid containing unit **311** may be set to be an area corresponding to the cross-sectional area of the joint.

The engaging projection **258** formed in the mounting unit **252** may not have the concave portion and a convex

engaging projection and a convex guide portion may engage with each other. Alternatively, the guide portion **296** included in the attachment **281** or **281**A may be formed in a concave shape and the convex engaging projection may be inserted into the concave guide portion.

The attachment **281** or **281**A may not include the convex portion **291** or the escape notch **281***c*.

In the attachment **281** or **281**A, the guide portion **296**F may be formed on a wall portion different from the second wall portion **291***b* forming the waste liquid introduction portion **293** and the connection concave portion **292**. One pair of guide portions **296**F and **296**S may be formed to project outward from the convex portion **291** in the width direction Y. For example, in the attachment **281** or **281**A, the guide portion **296**F may be formed on the fourth wall portion **291***d* forming the waste liquid introduction portion **293** to project outward in the width direction Y. In this case, the guide portion **296**S may be formed on the third wall portion **291***c* to project outward in the width direction Y.

In the attachment **281** or **281**A, one pair of guide portions **296**F and **296**S may be formed on the second wall portion **291***b* and the fourth wall portion **291***d* forming the waste liquid introduction portion **293** to project outward in the width direction Y.

The liquid ejected by the liquid ejecting unit **231** is not limited to ink. For example, a liquid material in which particles of a functional material are dispersed or mixed may be used. For example, a liquid material containing a material such as an electrode material or a color material (pixel material) used to manufacture a liquid crystal display, an electroluminescence (EL) display, and a surface light emission display in a disperse or resolved form may be ejected to perform recording.

The medium is not limited to a sheet, but a plastic film, a thin plate, or the like may be used or a fabric used in a textile printing apparatus may be used.

The entire disclosure of Japanese Patent Application No. 2014-094230, filed Apr. 30, 2014 and Japanese Patent Application No. 2014-218054, filed Oct. 27, 2014 are expressly incorporated by reference herein.

What is claimed is:

1. A waste liquid container detachably mounted on a mounting unit which includes a discharge portion discharging a waste liquid and a projection to which a substrate connection portion is joined, the waste liquid container comprising:

a containing portion that is able to contain the waste liquid;

a connection concave portion that is opened in a mounting direction in regard to the mounting unit so that the projection is insertable at a time of mounting on the mounting unit;

a circuit substrate that includes connection terminals electrically connected to the substrate connection portion at the time of the mounting on the mounting unit and is joined to the connection concave portion; and

a waste liquid introduction portion that is connected to the discharge portion at the time of the mounting on the mounting unit,

wherein in the connection concave portion, one pair of guide portions guiding the projection at the time of the mounting on the mounting unit is formed so that the connection terminals are interposed therebetween in a width direction intersecting the mounting direction, and

wherein of the pair of guide portions, one guide portion is disposed between the connection terminals and the waste liquid introduction portion in the width direction.

2. The waste liquid container according to claim **1**, wherein the one guide portion protrudes in a wall portion forming the waste liquid introduction portion and the connection concave portion to project toward an inside of the connection concave portion.

3. The waste liquid container according to claim **1**,

wherein the one pair of guide portions includes a guide surface extending in the mounting direction and the width direction, and

wherein the waste liquid introduction portion is opened in the mounting direction and an opening center of the waste liquid introduction portion is located on a plane including the guide surface.

4. The waste liquid container according to claim **1**, wherein at least some of the connection terminals are disposed to face a region between the one guide portion and the other guide portion of the one pair of guide portions.

5. The waste liquid container according to claim **1**,

wherein the substrate connection portion includes a movable contact portion elastically deformable according to a contact pressure, and

wherein at the time of the mounting on the mounting unit, the one pair of guide portions engages with the projection by an elastic restoration force of the movable contact portion which is pressed against the connection terminals and is elastically deformed.

6. The waste liquid container according to claim **1**,

wherein the connection concave portion and the waste liquid introduction portion are formed to be arranged in the width direction in a convex portion protruding from the containing portion in the mounting direction, and

wherein both ends of the convex portion in the width direction are disposed in the width direction more inside than both ends of the containing portion in the width direction.

7. The waste liquid container according to claim **1**, further comprising:

an absorber that is able to absorb the waste liquid;

an accommodation member in which an accommodation concave portion capable of accommodating the absorber is formed;

a film member that covers an opening of the accommodation concave portion; and

a reinforcement member that is disposed between the absorber and the film member,

wherein the containing portion is surrounded by the accommodation concave portion and the film member.

8. The waste liquid container according to claim **7**,

wherein the accommodation member includes a protrusion projecting inside the accommodation concave portion, and

wherein the absorber includes an insertion portion into which the protrusion is insertable.

9. The waste liquid container according to claim **8**, wherein the reinforcement member is disposed between the protrusion and the film member.

10. The waste liquid container according to claim **7**, wherein the reinforcement member is formed of a sheet-shaped resin material.

11. A liquid ejecting apparatus comprising:

a liquid ejecting unit that is able to eject a liquid; and

a mounting unit on which the waste liquid container according to claim **1** is detachably mounted,

wherein the mounting unit includes a discharge portion discharging a waste liquid and a projection to which a substrate connection portion is joined.

12. An attachment which is a separate body from a waste liquid containing unit accommodated in an accommodation chamber, in which a mounting unit including a discharge portion discharging a waste liquid to a waste liquid containing unit and a projection to which a substrate connection portion is joined, in a state in which the liquid containing unit is mounted on the mounting unit, the attachment comprising:

a connection concave portion that is opened in a mounting direction in regard to the mounting unit so that the projection is insertable at a time of mounting on the mounting unit; and

a circuit substrate that includes connection terminals electrically connected to the substrate connection portion at the time of the mounting on the mounting unit and is joined to the connection concave portion,

wherein in the connection concave portion, one pair of guide portions guiding the projection at the time of the mounting on the mounting unit is formed so that the connection terminals are interposed therebetween in a width direction intersecting the mounting direction.

13. The attachment according to claim **12**, further comprising:

a waste liquid introduction portion that is connected to the discharge portion at the time of the mounting on the mounting unit,

wherein of the pair of guide portions, one guide portion is disposed between the connection terminals and the waste liquid introduction portion in the width direction.

14. The attachment according to claim **13**, wherein the one guide portion protrudes in a wall portion forming the waste liquid introduction portion and the connection concave portion to project toward an inside of the connection concave portion.

15. The attachment according to claim **13**,

wherein the one pair of guide portions includes a guide surface extending in the mounting direction and the width direction, and

wherein the waste liquid introduction portion is opened in the mounting direction and an opening center of the waste liquid introduction portion is located on a plane including the guide surface.

16. The attachment according to claim **12**, wherein at least some of the connection terminals are disposed to face a region between the one guide portion and the other guide portion of the one pair of guide portions.

17. A waste recovery unit comprising:

the attachment according to claim **12**;

a waste liquid containing unit that is able to contain a waste liquid; and

a connection passage that connects the attachment to the waste liquid containing unit.

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